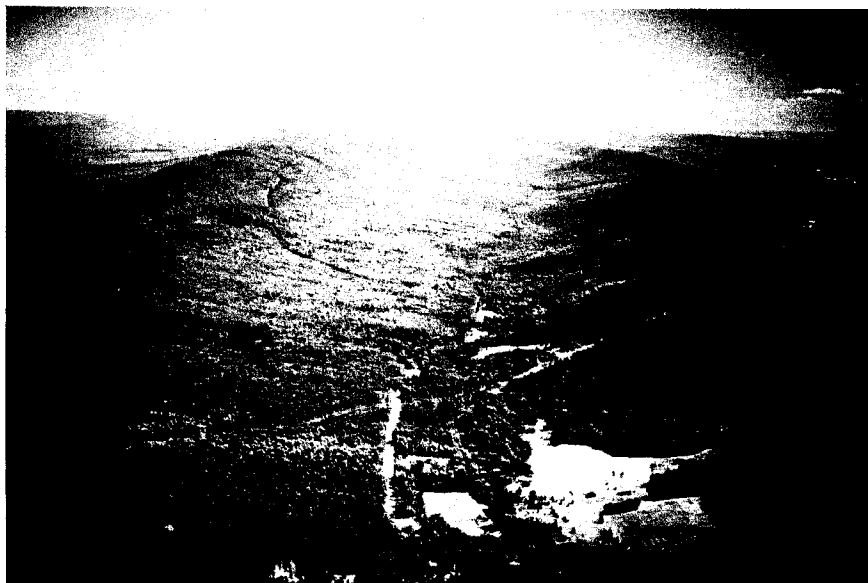


PENNSYLVANIA WILD AND SCENIC RIVERS PROGRAM

STONY CREEK STUDY



Commonwealth of Pennsylvania

Department of Environmental Resources

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STONY CREEK STUDY

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PROGRAM OVERVIEW

Scenic Rivers Program Synopsis

The Pennsylvania Scenic Rivers Act became law December 5, 1972. The Act authorized the establishment of the Pennsylvania Scenic Rivers System and mandates the Department of Environmental Resources to administer and implement the Scenic Rivers Act. The Pennsylvania Wild and Scenic Rivers Task Force was appointed by the Department's Secretary to advise and assist the Program staff in the completion of a scenic rivers inventory, in the establishment of river study priorities, and in the implementation of a State Scenic Rivers System. The Task Force works closely with the Department of Environmental Resources in an advisory capacity and represents a wide range of professional disciplines.

Scenic rivers designation is an important step in the process of managing and protecting river related aesthetic, ecological and cultural values. This process combines input from local governments, planning agencies, quasi-public and private organizations and individuals to achieve balanced objectives of resource use and protection. During the initial phase of this program (1975) an inventory of drainage basins was undertaken to identify potential components for the Scenic Rivers System and to recommend priorities for river studies. This initial inventory was completed through the combined efforts of the Department of Environmental Resources, the Wild and Scenic Rivers Task Force and Pennsylvania's ten uniform regional planning agencies. Waterways were evaluated according to indigenous natural resource values, character and extent of man-made development, resource endangerment, and recreational use or potential. Detailed information relative to stream names, drainage basins, proposed segment limits, approximate segment lengths, proposed classifications, involved planning regions and water quality data is provided in the Pennsylvania Scenic Rivers Inventory.

Scenic River designation is dependent upon completion of a detailed river study. The purpose of this study is to: (1) document environmental values, significance and eligibility for inclusion in the Scenic Rivers System; (2) recommend resource management and environmental protection alternatives; (3) evaluate environmental, economic and social impacts; and (4) recommend legislation necessary for designation. Public involvement is an essential aspect of Scenic Rivers studies. Designation and inclusion of a candidate stream within the Scenic Rivers System is contingent upon completion of the river study process and presentation of findings and recommendations to the public via hearings in the affected counties. Designation of these rivers as components in the Pennsylvania Scenic Rivers System requires legislative action from the Governor and the General Assembly.

Stony Creek Study

Purpose

The study of Stony Creek as a potential component of Pennsylvania's Wild and Scenic River System was begun in the spring of 1978. This

investigation is being conducted to gather a sufficient base of information upon which determinations of eligibility and classification can be made. Stony Creek was nominated as a wild waterway component of the Scenic Rivers Inventory because of the remote nature of its watershed and its free-flowing, relatively high quality waters. This study will serve to either confirm or justifiably modify this proposed classification should the waterway qualify for inclusion to the system.

Planning Process

The study methodology adopted and implemented during the course of this investigation generally includes the formation of an advisory group to establish study direction and monitor subsequent progress, completion of an inventory of both natural and man-made resources, the formulation of management recommendations based upon development limitations, aesthetic constraints, and the determined classification of the waterway, and the submission of the eligibility and classification conclusions along with the management recommendations by the Secretary to the Governor and General Assembly.

INTRODUCTION

The Stony Creek watershed occupies a land area approximately 35.6 square miles in size which is about 14 miles north-northeast of Harrisburg. Within the area nominated for study under the State Scenic Rivers Program there are no paved roads nor any evidence of recent human habitation. The waters of the stream are of high quality and presently exceed water quality standards. These inherent characteristics are particularly unusual considering the watershed is within 30 minutes of several hundred thousand people. Even more outstanding is its location within two hours of one-half of Pennsylvania's 12 million citizens, and within three and one-half hours of one-tenth of the United States' population.

The portion of the Stony Creek Watershed under investigation as part of Pennsylvania's Scenic Rivers Program can be defined as follows: on the north, the ridgetops of Third and Stony Mountains; on the south, the ridgetop of Second Mountain; on the east, the upper limits of the Watershed and on the west, the gate at the Game Commission's Ellendale parking area. The average width of this 17,200 acre study area is approximately 1.7 miles with an approximate length of 16 miles.

Stony Creek, which begins as a small spring in Lebanon County, flows through sixteen miles of cat briars, rhododendron, hemlock and mixed hardwood tree stands before reaching the western boundary of the study area. The stream is characterized by stretches of rushing water short deep pools, and occasional meanders. Three relatively small tributary streams - Rausch Creek, Yellow Springs, and Rattling Run - contribute to the volume of the stream's mainstem.

The remnants of once-thriving coal mining and timber harvesting activities are still in evidence along the aforementioned tributaries and at Cold Springs. The area has largely recovered from this historic human habitation.

The steep rocky side slopes of the study area's bounding ridges have aptly contributed to the designation of this area as "Stony Creek Valley". Stony Creek Valley is a center for numerous outdoor recreation activities. Among the number of factors which greatly contribute to this popularity are an abundant and diverse wildlife population, a successful fish stocking program by the Pennsylvania Fish Commission and the dissection of the area by many trails including the Appalachian Trail, the Horseshoe Trail, and a relatively level abandoned railroad bed which parallels the stream through the entire length of the study area.

In 1975, the Lebanon County Commissioners and Trout Unlimited nominated the portion of Stony Creek within State Game Lands 211 for Wild River designation. It is the aim of this study to determine whether the Stony Creek is eligible for designation as a wild component of the Pennsylvania Scenic Rivers System.

HISTORICAL PERSPECTIVE

In order to develop the proper perspective for following discussions, a historical sketch has been prepared of both the natural and cultural development of the Stony Creek Study Area. In this instance, natural development of the study area refers primarily to the geologic processes which interacted to produce the landform today known as Stony Creek Valley. The presentation of the area's cultural development covers both the people and events which contributed to the discovery, settlement, and present management of the study area.

Description of Geomorphic Development

Stony Creek Valley is located in the Ridge and Valley physiographic province. This area is sometimes known as the "folded Appalachians" because the originally flat-lying sedimentary rocks have been severely folded during the process of mountain-building. There may have been mountains several miles high here, but what we see now are the roots of mountains long since eroded away.

The rocks that make up the subsurface of the Stony Creek Study Area are classified as conglomerates, sandstones, shales and coals. They were formed from sediments that washed down from an ancient mountain range which lay to the south and east. The roots of these ancient mountains are now buried under the coastal plain and the Atlantic Ocean. During the time these sediments were being deposited, in the Mississippian and Pennsylvanian geologic ages over 250 million years ago, central Pennsylvania was covered by an inland sea. As the rivers which carried the sediments down reached the edge of the sea, they deposited their loads in deltas, similar to that of the Mississippi River today.

As the sediments accumulated, they were buried and consolidated into rock. Clays turned to shale, sands to sandstone and the pebbly channels of rivers to conglomerates. Where swamps existed for long periods of time, organic matter accumulated. The peats eventually became consolidated and under pressure turned to coal.

At the end of the Permian period a new stage of mountain building took place. As the giant plates that make up the earth's crust shifted, the continent of Africa slowly collided with North America. The sediments that had been deposited were uplifted and the rock layers were folded and faulted.

Over the millions of years that followed, the high mountains that formed were eroded nearly to sea level. The tops of the large anticlines (upward folds) and synclines (downward folds) were worn away. Since the folding was essentially parallel, the various units of rocks that were once stacked on top of each other like a layer cake, now outcrop in roughly parallel bands with the rocks now dipping at an angle. Where the folds are plunging the outcrop of each unit makes a V-shape on a geologic map. Throughout the central Appalachians which includes Stony Creek Valley, hard, resistant units of rock such as massive sandstones and conglomerates, outcrop ridges are found. The

softer, less resistant units such as shales and limestones are cut into by streams forming the valleys. Most of the rivers in this area flow in the valleys, but some, such as Yellow Springs and Rattling Run, cut through the sandstone ridges at watergaps. These rivers may be following old courses that existed when the land was nearly flat and close to sea level. As the surface was uplifted, or rejuvenated, the streams cut down to their present courses.

Description of Cultural Development

The history of Stony Creek Valley is not unlike that of countless other areas in the Eastern United States. Our forefathers were quick to utilize the lands for their natural resources, giving little regard for the treasures they were destroying. They can hardly be blamed; most of the United States was still a wilderness, with one mountain or valley resembling another. When the resources became unprofitable, a transition to industrial development usually followed and continues to this day.

Stony Creek Valley, however, has a different history, it being too narrow to allow industrial development and too rugged to support even subsistence farming. Today, anyone hiking through the valley can easily imagine the ruggedness of living in or traveling through this region where over 3,000 inhabitants lived in the 19th century. With the mines played out, the timber removed from the mountains and the railroad utilizing better routes, the entire Valley east of Ellendale Forge was abandoned for time and nature to heal.

The following section is a description of that historic process in the Valley; the Indians who once lived there, the first explorers of "St. Anthony's Wilderness," the development of coal and railroad, and finally, the decline of population and the historic remnants that now remain in Stony Creek Valley.

Early History - "St. Anthony's Wilderness"

Not surprisingly, the first inhabitants of Stony Creek Valley were Indians as evidenced by many artifacts (Figure 1), dated at 4500-5500 BC, which were found at a site on the south side of Sharp (3rd) Mountain.¹

The recorded history of Stony Creek Valley predates the birth of the United States by at least 34 years. The first documented travelers were Moravian missionaries who traversed the region to establish missions among various Indian tribes. The Moravians had the habit of bestowing the names of their friends and relatives on many of the geographic features which they encountered. One of these names which has survived through the years is "St. Anthony's Wilderness" - named, as one story goes, after Anthony Seyfert by Count Ludwig Von Zinzendorf in 1742.^{2,3} Count Zinzendorf, a patron of the Moravians, also gave the town of Bethlehem, Pennsylvania (founded 1741) its name during a hymn and prayer service on Christmas Eve.⁴

In 1745 Moravian Bishop Spangenberg (who had led Anthony Seyfert and eight other colonists to Georgia in 1735 to establish missions among the Creeks and Cherokees) journeyed through the valley to treaty

with the Six Nations Indians. Spangenberg wrote in his journal of being joined by Conrad Weiser at Tulpehocken and of camping the first night thereafter in "Anton's Wilderness". Their return trip, almost six weeks later, again took them through "Anton's Wilderness" enroute to their homes in Tulpehocken and Bethlehem.⁵ Bishop Spangenberg conducted several missions with the Indians at Fort Augusta in present day Sunbury during 1742-1745. He traveled there by way of an Indian trail which ran through St. Anthony's Wilderness. This trail ran from Indiantown Gap to Fort Augusta by way of Cold Spring in Stony Creek Valley, over Stony Mountain, through Clarks Valley, over Peter's Mountain to Lykens and on to Sunbury.⁶

The name "Anthony's Wilderness" appears in the Stony Creek Valley on Lewis Evans' map of 1749⁷ and on Sculls' map of 1770⁸. Shortly after the Revolutionary War, a map was prepared which labeled the area St. Anthony's Wilderness - a name used to this day by individual hikers and organizations such as the Sierra Club and the Appalachian Trail Conference.⁹

Originally, the name St. Anthony's Wilderness was applied to a much larger area that we now know as Stony Creek Valley. It probably included Clarks Valley, Powells Valley, and Lykens Valley to the north and extended much farther to the east. But with development, farming, and industrialization in the wider, more inhabitable valleys to the north, the original fuzzily defined boundaries of St. Anthony's Wilderness have been pushed inward and redefined until the generally accepted remnant of St. Anthony's Wilderness is only slightly larger than the Wild Rivers Study Area of Stony Creek Valley.

Coal Exploration and Development

The first coal survey in the area, and one of the earliest in Pennsylvania was started on February 24, 1768 in Stony Creek Valley at a point 1-1/2 miles east of the Susquehanna River and about 5-1/2 miles west of the Wild Rivers Study Area. About 1802, two boatloads of coal were sent down the Susquehanna to Harrisburg and Baltimore for trial use.¹⁰ By about 1824, many hundreds of trial shafts had been dug and it was generally thought that the most productive coal fields were located at least six miles up the valley from the Susquehanna River.¹¹

Stony Creek Valley then came to the attention of investors in New York and Philadelphia, and on April 5, 1826 the Dauphin and Susquehanna Coal Company was incorporated with the power to own up to 10,000 acres in Stony Creek Valley.¹² The companies' holdings stretched from Cold Spring in Lebanon County (in Dauphin County prior to March, 1829) to the Susquehanna River.¹³ The remaining part of Stony Creek Valley, from Cold Spring east, along with parts of Clark's Valley and Peters Mountain to the north was owned by the Stony Creek Coal Estate.¹⁴ Although these were separate companies, many of the officers and directors appear to have been the same, and their 1840 stockholders reports were printed as one book.

The Stony Creek Coal Estate, which owned about 32,000 acres,¹⁵ became known as the Pequa Coal and Land Estate in about 1849, and was officially deeded to the Dauphin and Susquehanna Coal Company on March 10, 1851.¹⁶

Transportation and the Railroad

Between 1824 and 1839 exploration for coal was intense, with hundreds of trial shafts being opened, usually at the gaps in Sharp Mountain where the coal was closer to the surface. Transportation of the coal from the virtual wilderness of Stony Creek Valley to the markets of Harrisburg, Philadelphia, and Baltimore was, however, a major problem. Most of the coal that was mined was simply piled up for want of transportation from the valley. In 1833 the Pennsylvania Canal was completed through Dauphin,¹⁷ still a long 13 miles west of the marketable coal in Stony Creek Valley. On April 11, 1827 the Dauphin and Susquehanna Coal Company was authorized to build a canal or railroad along Stony Creek to the mines, and several surveys were conducted between 1827 and 1830, but no construction was started.¹⁸

Meanwhile, a wagon, horse, and carriage road was slowly being constructed along the crest of Stony and Sharp Mountains to connect the mining operations in Stony Creek Valley. By 1840 sixteen miles of this carriage road were complete, with ten additional miles under construction by the coal company.¹⁹ This was eventually connected with other roads to the east to form a stagecoach road from Dauphin to Pottsville.²⁰ In 1839 a railroad survey was completed from Dauphin to the mines at Rattling Run by Edward Miller, civil engineer for the Dauphin and Susquehanna Coal Company.²¹ According to one source, the railroad was built in 1846-1847 from Dauphin to Gold Mine.²² Another source states that the railroad was completed by 1850 from Dauphin to Rausch Gap, with inclined planes located at Rattling Run and Yellow Springs.²³ This was the first railroad in Lebanon County.²⁴ In 1852 the Dauphin and Susquehanna Coal Company had a total of 29-1/2 miles of railroad, including inclines, in Stony Creek Valley from Gold Mine to Dauphin, where the company maintained a shipping basin, wharfer, and an engine house. At this time the company owned three locomotives and 529 coal cars capable of carrying three tons each.²⁵

During 1853-1854 a railroad line was built from Rausch Gap to Auburn where it connected with the Philadelphia and Reading Railroad.²⁶ This made the older line from Rausch Gap to Gold Mine a branch line, with total trackage held by the company being 57 miles.²⁷ At about this time Rausch Gap became a rail center, with company offices and machine shops.

In 1853 Cold Spring Township was formed, consisting of the portion of Stony Creek Valley which lies in Lebanon County²⁸ (Figure 2). At that time the township had a population of about 2,000 people, mostly connected with the mines and railroad.²⁹

The Decline

The president of the Dauphin and Susquehanna Coal Company was very optimistic and predicted that 20,000 tons of coal (2,250 pounds per ton) would be mined in 1853. However, many of the big mines began closing about 1855, and in 1857 the Dauphin and Susquehanna Coal Company was authorized to lease to or to merge with any other company. But before such action could take place, the company began defaulting on the interest payments on its bonds and on April 1, 1859, the railroad was sold and reorganized as the Schuylkill and Susquehanna Railroad.³⁰

This company did no better than the old Dauphin and Susquehanna Coal Co., and in 1860 agreed to sell controlling interest to the Philadelphia and Reading Railroad Company with the final transfer taking place on August 7, 1861. The Philadelphia and Reading continued to accumulate outstanding shares of stock and on May 29, 1872 was the sole owner of the Schuylkill and Susquehanna Railroad.³¹ Further decline was probably caused by the Civil War, with returning soldiers finding little employment in Stony Valley.³²

The final blow came in 1872 when the Philadelphia and Reading Railroad moved its offices and shops from Rausch Gap to Pine Grove. The population dropped from approximately 1,000 in 1860 to fewer than 100 in 1875.³³ Another source states that there were only 80 inhabitants in the entire Cold Spring Township in 1870.³⁴ Sometime around 1883 most of the buildings in Rausch Gap were torn down by the railroad and by 1910, the last residents had departed.³⁵ In 1923 Cold Spring Township had only six qualified voters,³⁶ and in about 1933, all railroad operations ceased in Stony Creek Valley.

At some point ownership of the land passed to the Grand View Coal Company which sold the land to the Pennsylvania Game Commission in 1945 for about \$4.50 per acre.³⁷ The tracks and ties were later removed and the Game Commission barred motorized vehicles from using the abandoned railroad grade. This right-of-way is currently maintained by the Game Commission as a service road.

Individual Historic Places in Stony Creek Valley

Most of the sites on the Pennsylvania Inventory of Historic Places are private homes, taverns, or other properties nominated by their owners to preserve and enhance, and possibly, to increase their value. The Wild River Study Area in Stony Creek Valley is a wilderness with no such structures with the possible exception of the old railroad station at Cold Spring. However, there are several sites and ruins in Stony Creek Valley which were associated with, and representative of, the birth and early development of our state and nation. Little remains today, and a casual visitor could easily pass through an historic area without noticing it. Therefore, the following areas not now on the list deserve to be placed on the Pennsylvania Historical and Museum Commission's Pennsylvania Inventory of Historic Places -- listed by geographic order, west to east:

1. Rattling Run Gap

Early coal exploration began here about 1827. Several structures were built here to house the miners and as a stagecoach stop.³⁸ An inclined plane was built here to transport coal down to the railroad on the valley floor, where a railroad station, water powered saw mill, and several other structures were built.

Remnants: Near the top of the incline, 11 house foundations exist. Several foundations also exist on the valley floor. The inclined plane still exists and is presently used as part of the Horseshoe Trail and the fire tower road to the top of Sharp Mountain.

2. Indian Encampment

The site of this encampment is near a spring on the south side of Sharp Mountain. This encampment has been dated at 4500-5500 B.C., based upon artifacts found at the site.

3. Yellow Spring Gap

By 1840 three mines were operating here,³⁹ the deepest eventually reaching a depth of 276 feet.⁴⁰ Here a mining town was built along the Dauphin-Pottsville stagecoach road.⁴¹ To transport the coal, an inclined plane was constructed from the summit to the railroad in the valley below, a vertical distance of about 800 feet. At this intersection with the railroad another small village was located, consisting of a railroad station, a water powered saw mill, several houses, a coal breaker,⁴² and several other buildings associated with the mining operation.

Remnants: The most intriguing of all the remains is a massive stone tower located near the 276-foot mine shaft (See Figure 3). It is believed to have been directly related to the coal shaft; as for what purpose, no one is sure. At the town site, many foundations are present along with a highly preserved hand-dug well.

The inclined plane is intact for most of the descent down the mountain, with the Yellow Springs Trail utilizing the plane for most of its length. At the base of the mountain several foundations exist along with an old wood-lined dam, which forms a spring-fed reservoir. A short distance to the east a few pieces of sawmill machinery can be found lying in the weeds along Stony Creek.

4. Cold Springs

The spring that triggered the development of this area was known at least as early as 1775,⁴³ and for a time the waters from this spring was bottled and sold throughout the eastern United States.⁴⁴ Prior to 1840, the Dauphin and Susquehanna Coal Co. began development of the area by building a bath

house and other buildings at the spring,⁴⁵ presumably for the use of company officers and employees. About 1850 the railroad was completed between Dauphin and Rausch Gap, with a station at Cold Spring. At about that time, and certainly prior to 1852,⁴⁶ the coal company built a hotel at Cold Spring, which was rapidly becoming a famous summer resort. It was so famous that the newly formed Cold Spring Township was named after it in 1853.⁴⁷ The closing of the nearby coal mines in the 1860's and the decline of Rausch Gap as a rail center in 1872⁴⁸ undoubtedly had some effect on the popularity of the resort at Cold Spring.

A newer, larger hotel had been built, but was destroyed by fire around 1900.⁴⁹ The Lancaster YMCA bought the property around 1920 and maintained it as a camp until it was sold to the Pennsylvania Game Commission in the 1940's.

Remnants: The Cold Spring railroad station remains in excellent condition (Figure 4). Of the resort itself, the foundations of both hotels remain (Figure 5) along with the foundations of the spring house, bath house, water tank, and numerous other foundations.

5. Rausch Gap

This town was established in 1827 when a Dr. Kugler opened a mine there.⁵⁰ The town grew rapidly in the early 1850's when the Dauphin and Susquehanna Coal Company completed construction of a railroad through the area. In addition to the mining activity, Rausch Gap became a rail center complete with company offices, workshops, residences, coal breaker, and a railroad turntable. About 1860, about 1,000 people resided in the town. The town began to decline in the 1860's with the closing of the mines. The final blow came in 1872 when the railroad offices and shops were transferred to Pine Grove. By 1875 the population had declined to fewer than 100 people. The town of Rausch Gap was completely deserted by 1910.⁵¹

Remnants: Over 80 foundations remain, including one believed to be a church, along with that of a hotel, railroad shops, stable, residences, and a railroad turntable. There are three hand-dug wells and a cemetery (Figure 6) with four remaining stones, three with 1854 dates. North of town the foundation of the coal breaker remains as well as a huge bridge abutment which carried a railroad spur line to Gold Mine.⁵²

Archaeology

Not surprisingly, the first inhabitants of Stony Creek Valley were Indians, a nomadic people who lived by hunting. While no formal archaeological examination has been done within the Study Area, artifacts found on the surface at one location have been dated at 4500-5500 B.C. by Mr. Del Zimmerman of Annville, Pennsylvania, an expert on the Indians of Pennsylvania.

The railroad and mining community of Rausch Gap was first settled in 1827 and was abandoned around 1910. During the summers of 1973-1974, a limited excavation and survey was conducted with the permission of the Pennsylvania Game Commission by students from Northern Lebanon High School under the directorship of Claude Schach, an earth science instructor. Over 80 foundations were discovered as well as 173 artifacts. The results of this study were published in Schach's work entitled, A Report on the History of the Rausch Gap Area.

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INVENTORY OF NATURAL RESOURCES

Land Resources

Knowledge of the physiography of an area is basic to an understanding of that area and its present condition. The variety of rocks which underlie the surface determines the topography of the land, the types of soils that form, the chemistries of the streams and groundwater, and the economic resources of the area. These factors also influence the types of vegetation and animal life that live in the area. This section briefly describes the general topography of the Stony Creek Study Area, the types of rocks found there, the structure and geologic history of the rock units and how these factors interrelate.

Topography

The Stony Creek Study Area occupies two parallel valleys formed by long straight ridges. Stony Creek is located in the southern valley and flows from east to west dropping from an elevation of 860+ feet to about 400 feet at the western edge of the study area. The valley continues east of the drainage divide and is there drained by the Evening Branch of Fishing Creek. South of Stony Creek, the boundary of the watershed is Second Mountain. To the north of Stony Creek lies Third Mountain which just to the east of Ellendale Forge splits, forming Sharp Mountain to the south and Stony Mountain to the north. Between the two there is a shallow valley. The streams that drain this valley cut through several water gaps in Sharp Mountain and flow down the mountain southward to become tributaries of Stony Creek. These gaps occur at Rattling Run, Yellow Springs, and Rausch Creek.

The tops of the ridges are not flat, but vary in relief by several hundreds of feet. In general, Stony and Sharp Mountains tend to be several hundred feet higher than Second Mountain to the south. The highest elevation on Second Mountain in the watershed is 1470 feet above sea level with most other elevations along the crest being over 1300 feet. Both Sharp and Stony Mountains have average elevations of over 1600 feet with the highest point in the drainage basin at 1687 feet on Stony Mountain.

The shallow valley between these two ridges has varying elevations because of the small streams that drain it, but it generally deepens towards the east.

Geologic Characteristics

Structural Geology

Stony Creek Valley is located in the trough of the Dauphin Syncline, which is part of the larger Minersville synclinorium, a large complex of folds that defines the extent of the southern anthracite coal field. The axis of the Dauphin syncline follows the shallow valley between Stony and Sharp Mountains, trending 60°-70° NE, and plunging to the northeast. In a syncline, the youngest rocks are exposed in the

center and progressively older units outcrop away from the axis. This syncline is asymmetrical with the southern limb nearly vertical to slightly overturned. The north limb dips to the south generally 35°-40°.

There are few outcrops in the Stony Creek Study Area and little subsurface work has been done there recently except for the extensive subsurface coring done in conjunction with the proposed pumped-storage project. Therefore, detailed geologic structure has not been delineated for the Study Area as a whole. Numerous faults may exist throughout, as many have been mapped in surrounding areas. An early report by Taylor (1840) on the mineral resources of the area mentioned a number of discontinuities encountered in the coal seams during the initial tunneling for mining operations.¹ Most of these discontinuities probably are a result of faulting. The water gaps that cut through Sharp Mountain may be located at faults, because rock that has been subjected to stress and fracturing is more easily eroded. The rocks throughout the area are well jointed.

Lithology

There are four rock formations that underlie the Stony Creek Study Area. They are from youngest to oldest, the Llewelyn and the Pottsville formations of Pennsylvanian age and the Mauch Chunk and Pocono formations of Mississippian age. The following descriptions of these units is taken from Wood in his publication entitled, Geology of the West Central Part of the Southern Anthracite Field and Adjoining Areas, U.S. Geological Survey, 1969, Prof. Paper 602.

The youngest rock unit, the Llewelyn Formation, is found in the center of the syncline and outcrops in the valley branch to the east of the Yellow Spring Gap. It is of Pennsylvanian age and consists of interbedded shales, siltstones, sandstones and anthracite coals. The individual beds are thin and often lenticular. Geologists have determined the original sediments were deposited on flood plains along the ancient deltaic shoreline.

The next older unit is the Pottsville Formation, also of Pennsylvanian age, and also deposited on a broad floodplain. Near the end of its period of deposition, numerous swamps formed in the area that is now the anthracite region. These swamps may even have extended to Ohio and West Virginia. Based on paleobotanical evidence (fossil plants), the seven foot vein of anthracite which resulted from accumulation of organic material in these swamps may have been contemporaneous with the seam known as the Lower Kittanning Coal found in western Pennsylvania. Most fossils found in this formation are ferns associated with the coal swamp deposits.

The Pottsville is a major ridge-forming rock unit in Pennsylvania because its conglomerates and sandstones, which make up the bulk of the unit are very resistant to weathering. It underlies Stony and Sharp Mountains. In this area, the formation is broken down into three members:

1. The Tumbling Run member consists of approximately the following percentages of the different rock types: 55% conglomerate, 30% sandstone, 15% shale and siltstone. It contains six beds

of anthracite coal. Where it outcrops, slopes are steep and rough and covered with talus (boulders). It supports a dense scrub forest.

2. The Schuylkill member is found at the crests and upper slopes of ridges. Its surface is generally smooth, covered with talus and supports a heavy forest. It is made up of 50% conglomerate, 30% sandstone, 20% shale and siltstone. It has four beds of anthracite.
3. The third member, Sharp Mountain, is the principal ridge former. It underlies hogbacks anduestas (sharp ridges with steeply sloping sides). Its higher resistance to weathering is due to the larger pebbles that make up the conglomerate units. The member is 45% conglomerate, 25% sandstone conglomerate, 15% sandstone, 14.5% siltstone and shale, and 0.5% anthracite. Three beds of anthracite are known. The unit supports a dense forest growth.

The Mauch Chunk Formation forms the Stony Creek Valley and underlies the Pottsville Formation. It is divided into upper, middle, and lower sections. The lower and upper parts underlie steep slopes and are usually covered by extensive deposits of talus and soils. The formation consists of thin sandstones, siltstone, and limestones, but the predominant lithology is red shale. Geologists have determined that the original sediments were deposited on a coastal flood plain, not on a delta. The red color of the rocks (due to oxidized iron) indicates that following deposition there was good drainage and the material was exposed to air and probably seasonal hot and dry conditions. Fossils are not abundant in the Mauch Chunk. This formation is late Mississippian in age.

The Pocono Formation is the oldest formation in the watershed. It is also a principal ridge former in the central Appalachians. It outcrops in narrow, precipitous ridge crests and also tends to be covered with talus. The formation consists of beds of conglomerate, massive sandstones, shales and thin lenticular coals. The sediments were probably deposited in channels of braided streams with some swamp and lacustrine (lake) deposits present. The rocks are gray colored, which indicates they were not exposed to the same climatic conditions experienced by the overlying red Mauch Chunk.

Geologic Features

The Devil's Racecourse

The Devil's Racecourse is a unique geomorphic feature located in the shallow valley between Sharp and Stony Mountains, east of the point where Third Mountain bifurcates (splits) forming the two mountains. The Racecourse is a long, narrow boulderfield, devoid of soil and vegetation. It is considered periglacial in origin. This means that it was formed under severe climatic conditions associated with the Pleistocene ice ages, but was not directly caused by a glacier itself. The closest extent of the glacier was 25 miles to the north.

The Racecourse is made up of large, irregular blocks of Pottsville conglomerate composed of clean white quartz. The only vegetation growing on the rocks are lichens. Rattling Run can be heard below the rocks, before it surfaces further down the mountain.

Richard A. Martin made an investigation of the Devil's Racecourse for his master's thesis at Millersville State College, (1972).² He found the boulderfield to be 3420 feet long and 120 feet wide. It slopes only 1.5° to 4.5°. The average size of the boulders is 4-4.5 feet but some that Martin measured as part of his study were 20 feet in length (See Figure 7).

The bedrock on the crests of Sharp and Stony Mountains is highly jointed. During the Pleistocene epoch a tundra-like climate must have existed in Stony Creek Valley. Freezing and thawing broke up the blocks along the joints. The same conditions probably also helped the boulders to creep and flow into the valley by saturating the soils. Vertical sorting, stone stripes, fitted surfaces and long sinuous mounds found on the Racecourse today attest to this type of movement. Martin measured the orientations of the individual boulders and found they were generally aligned in a downstream pattern. On Stony Mountain, poorly sorted stone streams and angular boulders are present today, while on Sharp Mountain there is less of this talus.

Boulders exist east and west of the Racecourse, but the terrain is forested. Here soil has been able to gain a foothold. Eventually the Devil's Racecourse will become covered also, but at the present, wind and water erosion manage to carry off any material that is caught there.

In his thesis, Martin also mentions a geologic study made by Brown for the Pennsylvania Power and Light (PP&L) pumped-storage project.³ Corings were made about one mile west of the Racecourse. The area to the west is generally swampy. The corings revealed 130 feet of overburden above the bedrock consisting of brown and gray sandy silts, clays and silty and clayey sands. He surmised they might be residue from the Llewellyn Formation, but the State Geologic Map does not show it outcropping that far west. Large boulders were only found near the surface. Further studies should clear this discrepancy.

Scenic Vistas

Scenic vistas or overlooks, are a "product" of topography and geology of an area. This certainly holds true for Stony Creek Valley in that the higher ridges, such as Sharp and Second Mountains, offer several areas for scenic views. The Stony Mountain Look Out Tower on Stony Mountain and the area surrounding the Stone Tower at Yellow Springs Gap (see Figure 2) are two such areas.

Although heavily forested in some areas, views of surrounding ridges and country side can be found. Stony Creek itself, however, may not be readily seen from these vistas.

Mineral Resources

Coal is the major mineral resource in the Stony Creek Study Area. The coal becomes more anthracitic towards the eastern part of the area. Numerous veins exist that were mined in the 1800's. The development of the coal mining industry in this area is covered in the history section of this report. The old workings are long since abandoned, but groundwater drainage through these mines is polluted with characteristic acid mine drainage. Where the drainage comes to the surface, such as along the Yellow Springs trail, "yellow-boy" deposits, which are iron hydroxides, coat the bottoms of the streams.

In Taylor's 1840 report on the prospects for coal development, he mentions the presence of iron deposits in the area.⁴ Some of these were bog iron which were found in the swamps of the upper valley. Other deposits were hematite, probably concentrations within the sandstones of the Pottsville or Llewellyn formations. Siderite nodules were also mentioned as a source of iron. However, none of these deposits were of great enough extent to warrant commercial development.

Soils

The soils of Stony Creek Valley are directly related to the geology, topography and vegetation of which the Valley is composed. Many of the soil associations have developed on the materials weathered from underlying rocks, such as shale, sandstone and conglomerate. The vegetation of the Valley is influenced by soil types, slope, permeability and stoniness.

Soil characteristics also influence the past and present land uses of the Valley. The majority of the soils are classified as "very stony loams" with moderate permeability and varying degrees of slope. It is little wonder then, that due to the soil types, steep slopes and heavy forest cover, a minimum of agricultural activity occurred in the Valley.

According to modern soil surveys, the majority of Stony Creek Valley is not suitable for development. This can be attributed to the possibilities of serious erosion and the sensitive nature of the low-lying floodplain soils.

Appendix A presents a description of the soil associations and their related slope and development limitations.

Water Resources

Surface Water Features

The Stony Creek drains a watershed of about 35.6 square miles. The study segment occupies a straight, narrow valley between Second Mountain on the south and Sharp, Stony, and Third Mountains to the north. Elevations within the study corridor vary from 460 feet at the Ellendale gate to 1690 feet on Stony Mountain.

Stony Creek originates in Lebanon County at a headwaters elevation of 850 feet and flows in a west southwesterly direction for a distance of 21 miles until reaching its confluence with the Susquehanna River near Dauphin, Dauphin County (elevation 320 feet). Although the stream gradient varies between 20 and 40 feet per mile, the average gradient is approximately 25 feet per mile. The stream length through the study segment is approximately 16 miles. The average width and depth of the stream is 20 feet and two feet, respectively. U.S. Geological Survey records of streamflows indicate that flow in Stony Creek is normally highest from February through May and lowest from August through September. The mean monthly streamflows for the periods of record from 1937-1945 and from 1967-1970 are listed in Appendix B.

The three predominant tributaries of Stony Creek; Rausch Creek, Yellow Springs, and Rattling Run; originate in the higher elevations of Sharp and Stony Mountain. The hydrologic characteristics of these streams (i.e. narrow rocky channel with steep gradient and very quick hydrologic response) are very much like those of any small mountain stream in the Commonwealth.

During seasonal periods of abundant precipitation the floodplain of Stony Creek is occupied by innumerable small ponds. These vernal ponds, discussed later in the flora and fauna section, represent an important link in the life cycle of many species of animal life.

Groundwater Characteristics

No specific data are available in the Stony Creek Valley to properly evaluate the aquifers present. There has been information collected by PP&L through core drillings, made during their project feasibility investigation. The results of these core samples have not been made available for public reviews. General statements are possible through experience gained from aquifer units in adjacent anthracite fields.

The Llewellyn Formation (underlying the Valley between Sharp and Stony Mountains, east of Devil's Racecourse) is composed of sandstone, shale, and conglomerate and numerous coal beds. This formation has been folded into a deep trough which has been faulted and may, in places, be overturned. Groundwater occurs in this formation in the old coal mine workings and in the secondary fractures in the rock. The quality of the water may be poor due to the oxidation of the pyrite in the coal and associated rocks.

The Pottsville Formation (underlying Sharp, Stony and Third Mountains) is composed chiefly of hard coarse quartz conglomerate and has been folded into a large syncline, along with other formations. Where this rock unit has been fractured, it may be an important water bearing unit. Considerable secondary porosity (from fractures) may be present and the axis of the syncline could be a very favorable location for large quantities of groundwater supplies. Generally, the groundwater quality should be good, however, where extensive coal mining has occurred, the flow and quality has been altered. This is evident by springs in the area discharging yellow acid mine drainage.

The Mauch Chunk Formation is composed of red and greenish gray shale and sandstone, underlying Stony Creek Valley. Although the lowest (deepest) rock unit in the synclinal basin, it may prove to be a moderate to high yielding aquifer. This Formation crops out around nearly all the anthracite fields and is an important source of domestic and industrial water supplies. Water supplied by this formation is generally of good quality.

The valley between Sharp and Stony Mountains contains numerous swampy areas which are underlain by colluvial deposits. These deposits on the slopes of the Valley probably contain groundwater.

Close to the stream and in low lying sections of the Valley, many swampy areas exist, partly due to the porosity of the soils and the general nature of the groundwater table in those areas. Some of this wetness has also been attributed to past flooding by beaver dams when this animal was prevalent in the Valley.

Numerous springs and seeps may be observed in and around talus along the abandoned railroad bed. Other known springs used frequently by Valley visitors occur at Yellow Springs Gap and mid-way between Yellow Springs and Cold Springs just south of the Appalachian Trail.

Water Quality Condition

A great deal of information has been compiled documenting the water quality conditions of Stony Creek. The following is a summation of information contained within published reports by Ichthyological Associates, Denoncourt, and Brezina.

Stony Creek exhibits water quality conditions very much like many mountain streams in Pennsylvania. Its waters contain extremely low mineral ion concentrations and can thus be characterized as chemically sterile. This condition can be attributed to the low mineral ion contents and low buffering capacity of underlying rock strata. The stream does, however, meet current water quality standards and is proposed as a high quality stream under the proposed water quality standards currently being developed by the Department of Environmental Resources.

Several known sources of acid mine drainage from abandoned mining operations are known to exist within the Study Area. Rausch Creek, a tributary located in the Stony Creek headwaters, receives periodic discharges of acid mine drainage.

The Flora and Fauna of Stony Creek Valley

Terrestrial Animal and Plant Life

The study of the important attributes of Stony Creek Valley cannot be complete without an investigation of the Valley's typical and not-so-typical flora and fauna. Flora is defined as an area's or region's vegetation, plants and/or associated tree and ground cover. Fauna is described in terms of the native wildlife of a region and in this section,

the focus will be on the terrestrial and amphibian inhabitants of the Study Area.

This section is divided into four basic parts: (1) a general overview of flora and fauna as it relates to the location of the Valley, (2) a description of the floodplain and its associated flora and fauna, (3) a description of the flora and fauna found on the slopes and ridges in the Valley, and (4) an outline of the important attributes of the Study Area, focusing on the unusual species and qualities of the Study Area.

Overview

The entire watershed within the proposed stream segment is forested except for several small food plots created by the Pennsylvania Game Commission for the deer population, and that area which is covered by several boulder fields. The food plots are not visible from the mainstream of Stony Creek, but are mainly found in the higher slopes and ridgetops. As elsewhere in the Ridge and Valley areas, local topography and soil factors interact with hydrologic characteristics creating a spectrum of flora habitats distinctly different from the general climax vegetation that might be found in a more mature and historically undisturbed forested area. In Stony Creek Valley, the slopes are dominated by mixed oaks while the valley floor is predominately covered by hemlocks and white pines. The slopes and valley floor also include ponds, vernal ponds, swamps, marshes, sphagnous areas, wet meadows, cove forests and very dry, or xeric areas, such as boulder fields, rocky cliffs and various combinations of all the preceding. Again, many parts of Stony Creek Valley is different from the typical climax area, mainly due to the Valley's soil conditions being too wet or dry to support the typical climax vegetation.

Flora of the Floodplain and Streamside

Beginning at streamside, the floodplain of Stony Creek is permeated with subsurface channels formed by flowing water. This is evident anywhere that the partly decaying organic matter covering the forest floor has fallen between underlying rocks exposing running water from the stream. There are also many surface channels that have resulted from complete washout of the forest ground cover during floods. The floodplain surface is virtually free of fine alluvial deposits such as silts and clays, which is typical of wooded watersheds that have not been disturbed for some period of time. Even at floodstage, as evidenced during tropical storm Eloise in September, 1975, the waters of Stony Creek are virtually clear of silt (Figure 8).⁵ Any buildup of organic material can be traced to the decomposition of the foliage and branch parts of the vegetation surrounding the stream.

The streamside community is dominated by hemlock and white pine with tulip tree, black birch and red maple being major subdominants. Also present are concentrations of American beech, white oak, red oak, black gum and scattered stands and individuals of sugar maple, basswood and yellow birch (1976 Survey, Wingert). The understory is variable with some dense areas of rhododendron, scattered stands of paw paw,

witch hazel, striped maple, running strawberry bush and American holly (Figure 9, 10).⁶

Many portions of the floodplain are covered with water and are never dry, or may retain still or slowly moving water year round. This wetness precludes tree and shrub growth but supports stands of jack-in-the-pulpit, ferns (hayscented) or simply sphagnum moss. In these sphagnum areas, some interesting plants such as purple fringed, yellow fringed and wood orchids grow. Also along the periphery of the open water, sundew can frequently be found growing among the sphagnum moss.

Fauna of Floodplain and Streamside

The many seasonal ponds, or vernal ponds, found on the floodplain support a substantial population of amphibians, which breed there during Fall and early Spring.⁷ These temporary waters are free of predators usually found in or around permanent ponds. On rainy nights in early March, it is not uncommon to count wood frogs and spotted salamanders by the hundreds migrating from the ridges to vernal ponds on the floodplain (Figure 11).⁸ Also found close to the streamside and in other associated areas are turtles, the green frog, pickerel frog, and a vast variety of salamanders (See Appendix for complete listing).

Flora of Slopes and Ridges

As the floodplain gives way to the slopes of the ridges, the hemlock-white pine community blends with the vegetation (oak association) typical of the majority of the slopes found in Stony Creek Valley. Many hemlock and white pine seedlings upslope beyond the mature trees indicate an expansion of the hemlock-white pine community.

On the lower slopes, chestnut oak is the dominant tree with black birch a subdominant. The understory species are quite variable in these areas. Depending on the soil conditions on the lower slopes, the understory may consist of mountain laurel and blueberry, with striped maple or american holly as subdominants.

With increasing distance upslope from the stream, red maple becomes more significant and almost becomes codominant with chestnut oak. Also, with increasing distance upslope from the stream, mountain laurel gives way to blueberries as an understory dominant. The American holly disappears a few hundred yards upslope. Finally, the ridge tops are dominated by chestnut oak, but striped maple and american chestnut sprouts are becoming more evident in these higher areas.

Fauna of Slopes and Ridges

Inventories of the mammals of the Study Area indicate a wildlife population that is typical of colonial Pennsylvania.⁹ From perhaps the smallest to more larger mammals found in areas leading from the stream to ridgetops, the following are considered typical for the Study Area: deer mouse, redback vole, red bat, big brown bat, eastern mole, masked shrew, flying squirrel, raccoon, opossum, red and gray fox, whitetail deer, and an occasional black bear. In the proceeding section is a discussion of the more unusual or rare species found in the Study Area.

Flora and Fauna: The Important Attributes

In investigating the flora and fauna of the Study Area, several important attributes should be recognized and are outlined as follows:

1. The Stony Creek Study Area (17,200 acres) is an integral part of a 38,000 acre area, mostly remote from human intrusion by any means but by foot. Large land tracts offer means of preserving many well known and obscure plant and animal species.

The remoteness from human development is also important to certain species impacted by development. For example, the recent decline of the giant silk moths in many areas of the United States is thought due to a combination of pollution and electric lights. The pollution interfering with the olfactory location of female moths by the male has been attributed to the decline along with the attraction of male moths to electric lights, causing them to die before they can locate the female moths.¹⁰

Species such as coyote, birds of prey and many snakes, may find refuge in Stony Creek Valley. Species such as ravens and various other birds whose nesting grounds are easily disrupted by passers-by are safer in large roadless areas free from intrusion.

2. The watershed is an important environmental education resource as it contains a variety of natural habitats typical of southeastern Pennsylvania. The habits of animals and the dispersal patterns of those animals and plants are not modified by roads, fields and other man-made intrusions in the Valley. Species often considered offensive to man can exist and be studied here without impacting human activities.
3. The valley floor and lower slopes supports a substantial population of American holly trees. Although this is not the northern-most limit for the trees, it is one of the largest stands of these trees in the species' northern range. During a tree survey conducted by Wingert in 1976, over 200 American holly trees were counted in just one area of the Valley (a .2 mile stretch). The hollies are not found in the valleys on either side of Stony Valley and are unique, according to Denoncourt, 1974, to this area of Pennsylvania. Their distribution ranges from Cold Springs to below Ellendale Forge and in some places, reaches over 1,000 trees per mile of streambed. The variety of ages ranging from seedlings to mature trees and production of fruit indicate reproductive success is occurring and that the holly will persist in the valley.

4. Within the valley is a pack of eastern coyotes, as evidenced by the shooting of one of the species in December of 1976. These coyotes have apparently migrated from Canada and are larger than the western coyote. The specimen shot in Stony Creek Valley is the largest known for the State.¹¹ Biologists feel that the eastern form is evolving to fill the niche left by the extinction of the eastern timber wolf. Stony Creek Valley offers a reasonably safe habitat for the evolution of this predator.

Another unusual species recently discovered in the Valley is the Woodland Jumping Mouse. Further studies are under way by members of the William Penn Museum, Harrisburg.

5. The many boulder fields, of which Devil's Racecourse is the largest, are xeric (dry) areas undergoing primary succession. These areas support lichens, some mosses and hardy ferns which are slowly breaking the rock into soils. The boulder fields offer a unique outdoor laboratory for the study of this process in Pennsylvania. The extensive boulder fields are also potential habitat for the rock shrew, a species rare to this area, which has been found within thirty miles of the Valley in a similar situation.¹²
6. A bluebird trail maintained within the watershed and on its periphery fledged 412 birds in 1977 and over 800 in 1978. The abundant fruit of the valley and its relative freedom from starlings provide an important breeding area and wintering grounds for the bluebird species.¹³

In conclusion, based on the description of the flora and fauna of the valley, designation of Stony Creek as a Wild River will enhance efforts to preserve these unique attributes in a State rapidly running out of large land tracts of this quality and importance.

Aquatic Life of Stony Creek

Stony Creek has been described as a low alkaline stream which arises in Cold Spring Township, northeastern Lebanon County, following a southwesterly course through Dauphin County to its confluence with the lower main Susquehanna River at Dauphin, Pennsylvania. The sinuous channel meanders through shale and sandstone formations, hence the low carbonate content, with a rough, rocky bed. The 16 mile course through the study area has numerous pools and riffles and is shaded along most of its course by dense, riparian shrubs and a canopy of mixed deciduous and coniferous trees. The 26.9 square mile study area is composed of a narrow densely forested valley flanked by the Third and Sharp Mountains on the northwest and Second Mountain on the southeast.

The narrow range of water temperature affected by the hydrologic features of the floodplain and associated stream bed, limits, to some degree, the resident fauna of Stony Creek. Succession of fungi and bacteria so essential to the ecological processing of this stream ecosystem

is also significantly affected by the narrow water temperature range.^{14,15} Universally, the native fauna of streams flowing through densely forested, shaded terrain are supported by the organic matter elaborated in the terrestrial communities adjacent to the stream. In fact, the evolution of particular genera and their geographic limitations are supported by the caddisfly, resident in substantial numbers throughout the drainage of Stony Creek.¹⁶ The animal component of this healthy community are largely dependent on the dissolved or particulate plant products directly or indirectly entering the water column via gravity and being incorporated in the complex food web.

In this web, leaf litter, twigs, bark and all other plant parts with their associated fungi and/or bacteria are eaten by the tiny and intermediate sized invertebrates of the stream system.¹⁷ This aspect of Stony Creek as typical of similar streams can be abruptly changed by any excessive exposure to solar insolation.

The findings of significant preliminary studies conducted in Stony Creek Valley, report broad diversities of benthic macroinvertebrates, terrestrial flora and vertebrates, as well as physio-chemical and physio-ecological qualities amenable to the stream.^{18,19,20,21} Different authors projected different evaluations of the productive potential of Stony Creek as a self-perpetuating trout stream. There does exist a diverse insect fauna and the presence of fingerlings and eggs of resident species as found in some samples within the Study Area.²² However, the relatively low numbers of benthic macroinvertebrates and native trout found does not in itself contribute to a viable trout fishery.

Variation in pH values in different published studies may be a function of the time and season collected. The Stony Creek basin is naturally sterile, and offers little buffering action to acid introductions, whether by slugs of mine drainage from Rausch Creek or from acid precipitation. The presence of the profuse moss population which colonizes the bottom stones is evidence of the normal lower pH of Stony Creek.²³ In their 1976 survey, Dauphin County Chapter of Trout Unlimited found the pH of Stony Creek to average 6.6 with variations between 4.6 and 5.2 at tributaries such as Rausch Creek.

Sources of Pollution: Acid Mine Drainage

Several known sources of acid mine drainage (AMD) from abandoned mining operations are known to exist within the Valley and help to contribute to the lower pH of the stream. The acid mine drainage impact, as indicated by the presence of numerous species of intolerant insects, is not severe. AMD as general runoff does not seem to be problematic although porosities in floodplain rock could allow rapid injection of acid water from old tailings. Present vegetation seems to have abated the lateral move by slowing surface runoff into the stream. The major sources of AMD are pinpointed at the tributary streams of Rausch Creek and Rattling Run.

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INVENTORY OF CULTURAL RESOURCES

Description of Land Ownership and Political Subdivision

The study segment of Stony Creek flows through both Lebanon and Dauphin Counties. The local municipalities having the authority to govern use of the study segment not in public ownership include Cold Spring Township, Lebanon County; and Middle Paxton and East Hanover in Dauphin County.

The Pennsylvania Game Commission owns 30,407 acres, which comprises the majority of land within the Valley. The PP&L and Metropolitan Edison Companies own the 1,702 acres comprising the remainder of the study corridor. This area once owned by the Pennsylvania Game Commission was acquired by the utility companies through a land title transfer to the Game Commission of 5,469 acres.

Socio-Economic Conditions and Trends

In discussing Stony Creek Valley as it exists today, one cannot begin to ignore the past history and settlement patterns of those who once inhabited the towns, villages and areas surrounding the designated Study Area. As detailed in the History Section of this study, Stony Creek Valley's past was greatly influenced by the availability of natural resources, transportation access and overall economic trends. These trends continue to influence the growth and development of the area surrounding the Study Area's borders.

The purpose of this section is to investigate these growth patterns as they relate to: (1) the Area's existing and future population, (2) local economy, and (3) land development trends. This discussion will be limited to that land within the political boundaries which encompass the Stony Creek Valley Study Area.

Population: Existing and Future Trends

For over a century, settlers inhabited Stony Creek Valley, their population swelling to nearly 3,000, then declining to its existing level of absolute zero.¹ With this flux in population, the townships and boroughs surrounding the Study Area have experienced steady, but gradual growth. Both Lebanon and Dauphin Counties have increased moderately in population from 1960-1970. Table 1 presents population figures for the past eighteen years up to the year 2000, as projected by the County Planning Agencies.² This Table also illustrates that the majority of townships in Lebanon County and Dauphin County, including the Borough of Dauphin, will continue to experience growth in the next twenty years. As a comparison, Dauphin County is expected to experience an approximate 16.6% increase in population from 1975 to 2000 while Lebanon County is projected to grow an estimated 32.6% between these years.

TABLE 1

POPULATION TRENDS
SURROUNDING STUDY AREA

| | <u>1970</u> | <u>1975</u> | <u>1980</u> | <u>1990</u> | <u>2000</u> |
|------------------------------------------|-------------|-------------|-------------|-------------|-------------|
| Pennsylvania:* | 11,800,766 | 11,863,711 | 12,319,165 | 13,385,204 | -- |
| County:** | | | | | |
| Dauphin | | 224,773 | 237,005 | 254,810 | 262,305 |
| Townships:*** | | | | | |
| Middle Paxton | | 3,362 | 3,767 | 4,437 | 4,697 |
| West Hanover | | 4,407 | 5,238 | 6,801 | 7,094 |
| East Hanover | | 3,091 | 3,849 | 5,730 | 6,318 |
| Jefferson | | 164 | 173 | 203 | 216 |
| Wayne | | 513 | 582 | 688 | 729 |
| Rush | | 160 | 184 | 219 | 232 |
| Borough: | | | | | |
| Dauphin | | 998 | 1,117 | 1,238 | 1,280 |
| Greater Harrisburg Metropolitan Area: | | 429,498 | 455,650 | 494,460 | 527,795 |
| Harrisburg City*** | 60,000 | | | | 56,000 |
| County:** | | | | | |
| Lebanon | | 108,898 | 112,904 | 127,854 | 144,497 |
| Townships:*** | | | | | |
| Cold Spring | | 117 | 109 | 121 | 134 |
| Union | | 2,661 | 3,161 | 3,751 | 4,423 |
| East Hanover | | 2,127 | 2,289 | 2,542 | 2,815 |

*Figures from U.S. Bureau of Census and PA Office of State Planning and Development, 1973 and reported in the Capitol Region Economic Development Plan, Nov. 1977, p. IV-15.

**From Tri-County Regional Planning Commission and Lebanon County/City Planning Agency, as reported January 6, 1978.

***From the Comprehensive Water Quality Management Plan for Study Area 3, Chapter V, 1976. (Gannett, Fleming, Corddry and Carpenter, Inc.).

While Lebanon County is to experience a greater increase in population density, from 1970 to 2000, Dauphin County will maintain a higher density of the two counties. The table below illustrates this conclusion:

| | <u>Average Population Density</u> (Persons/Sq. Mile) | | <u>Land Area</u> (Sq. Mile) |
|--------------|---------------------------------------------------------|-------------|--------------------------------|
| | <u>1970</u> | <u>2000</u> | |
| DAUPHIN | 401 | 475 | 557.7 |
| LEBANON | 278 | 369 | 307.1 |
| PENNSYLVANIA | 262 | 315 | 44,966.0 |

From: Comprehensive Water Quality Management Plan, Study Area 3,
Chapter VIII, A.

Increasing population and distribution throughout the two counties reflects the desirability of this area for development. The out-migration of urban dwellers into the more rural or suburban portions of this area is also reflected by the increase in growth of the smaller communities surrounding the Valley. Also to be considered is the population increase of areas such as the "West Shore" in Cumberland County. This County is expected to experience a thirty percent increase in growth by the year 2000, with the majority of that increase occurring in the townships and boroughs comprising the County's border along the Susquehanna River.³

Increased urbanization will most certainly affect the demand services, open space, recreation and other environmental amenities in the future. Other growth and development factors as they relate to Stony Creek Valley are discussed later in this section.

Local Economy: Past, Present and Future

One significant factor influencing the growth and development of Dauphin and Lebanon Counties is the local economic conditions and trends predicted for the future. The potential for an increased labor force brought about by a healthy economic climate in many cases has determined and continues to influence growth and development patterns. A description of each county's past, current and predicted future economic conditions is presented in the following discussion. All information was collected from the November 1977 document entitled, "Capitol Region Economic Development District Initial Overall Economic Development Program," (OEDP), produced by the Capitol Region Planning and Development Agency, Harrisburg.

Dauphin County

The major sources of employment in the County have been and continues to be shared by Government (State, Federal and Local), Services, and Wholesale and Retail Trade and Manufacturing. Table 2 illustrates the historical trends from 1960 to 1990 of the major employers in the Harrisburg Labor Market Area, defined as Dauphin County. In the Manufacturing sector, the food and kindred products industry currently employs

the highest percentage of workers, and is expected to continue to do so in the future.

From 1966 to 1975, the county experienced a general but slight economic decline, which has been attributed to the 1975 economic recession. However, the forecast for the county is considered good with major industries and employers such as Hershey Foods, Hershey; Bethlehem Steel, Steelton; and the State and Federal government supplying job opportunities and support of the general economy of the county.

Lebanon County

The major contributions to the Lebanon Labor Market Area, defined as Lebanon County, is illustrated in Table 3 as being Manufacturing, Wholesale and Retail Trade and Government. Like Dauphin County, Lebanon has experienced and is projected to experience general economic growth. However, both counties are predicted to see a decrease in employment in the Agricultural and Mining sectors, with Lebanon experiencing a greater decrease in the latter mentioned industry.

Of that which comprises the Manufacturing industry, fabricated metal products and the apparel industries dominate the county. This is expected to continue, although the apparel industry has experienced some decline.

In general, the overall economic picture from 1966 to 1975 illustrates a moderately fluctuating employment record, with some decline in 1974. The projections, however, indicate a healthy economic climate for the county with the majority of economic activity centering in Lebanon City and adjacent townships.

In conclusion, both Dauphin and Lebanon Counties possess "attractive" records for current and future economic growth, a major influence on development in the area surrounding Stony Creek Valley.

Future Development Patterns of Surrounding Areas

A discussion of the future growth and development of the area around the Valley cannot be divorced from an investigation of the factors affecting that pattern and their relationship to the use of Stony Creek Valley. The actual development patterns as conceived by several sources are presented first, followed by a discussion of the influences on those development trends and patterns.

Dauphin County: Future Land Use Characteristics

Dauphin County is anticipated to experience a considerable amount of new development, the greatest increase being in urban and public land uses (schools, highways, utilities, etc.).⁴ Agricultural and vacant land is projected to decline by the year 2000, however, this land use is still anticipated to dominate the character of the County in the future.

TABLE 4

HISTORICAL AND PROJECTED EMPLOYMENT BY INDUSTRY

Harrisburg Labor Market Area

| | Historical | | | Projected | | Change, 1980-1990 | |
|-------------------------------------------------------------|------------|---------|---------|-----------|---------|-------------------|-------|
| | 1960 | 1970 | 1980 | 1985 | 1990 | Number | % |
| Total, All Industries | 166,691 | 193,507 | 216,849 | 226,813 | 235,681 | 18,832 | 8.7 |
| Agriculture | 4,900 | 4,000 | 2,292 | 1,925 | 1,695 | -597 | -26.0 |
| Mining | 297 | 182 | 109 | 91 | 79 | -30 | -27.5 |
| Contract Construction | 9,987 | 10,973 | 12,203 | 12,659 | 13,017 | 814 | 6.7 |
| Manufacturing | 34,942 | 36,403 | 37,335 | 38,573 | 40,102 | 2,767 | 7.4 |
| Durables | 15,002 | 17,055 | 19,128 | 20,656 | 22,408 | 3,280 | 17.1 |
| Nondurables | 19,940 | 19,348 | 18,207 | 17,917 | 17,694 | -513 | -2.8 |
| Transportation, Communications, & Other Public Utilities | 14,028 | 14,948 | 15,136 | 15,200 | 15,227 | 91 | 0.6 |
| Wholesale & Retail Trade | 31,323 | 40,808 | 46,870 | 48,851 | 50,585 | 3,715 | 7.9 |
| Finance, Insurance, & Real Estate | 6,564 | 9,419 | 10,681 | 11,117 | 11,536 | 855 | 8.0 |
| Services | 24,550 | 32,574 | 37,677 | 39,959 | 42,642 | 4,965 | 13.2 |
| Government | 40,100 | 44,200 | 54,546 | 58,438 | 60,798 | 6,252 | 11.5 |
| Federal | 15,900 | 9,000 | 11,680 | 13,044 | 13,995 | 2,315 | 19.8 |
| State & Local | 24,200 | 35,200 | 42,866 | 45,394 | 46,803 | 3,937 | 9.2 |

SOURCE:

Pennsylvania Office of State Planning and Development, Pennsylvania Projection Series, Report No. 73
 PPS-2, Employment (Harrisburg, Pa.: November, 1973). Changes computed by CRPDA.

TABLE 5

HISTORICAL AND PROJECTED EMPLOYMENT BY INDUSTRY

Lebanon Labor Market Area

| | Historical | | | Projected | | Change, 1980-1990 | |
|-------------------------------------------------------------|------------|--------|--------|-----------|--------|-------------------|-------|
| | 1960 | 1970 | 1980 | 1985 | 1990 | Number | % |
| Total, All Industries | 35,935 | 41,245 | 45,795 | 48,114 | 50,376 | 4,581 | 10.0 |
| Agriculture | 2,000 | 1,700 | 1,086 | 925 | 864 | -222 | -20.4 |
| Mining | 1,037 | 923 | 775 | 714 | 679 | -96 | -12.4 |
| Contract Construction | 1,474 | 1,396 | 1,561 | 1,635 | 1,691 | 130 | 8.3 |
| Manufacturing | 14,640 | 15,352 | 16,151 | 16,805 | 17,465 | 1,314 | 8.1 |
| Durables | 5,085 | 6,081 | 6,899 | 7,448 | 8,012 | 1,113 | 16.1 |
| Nondurables | 9,555 | 9,271 | 9,252 | 9,357 | 9,453 | 201 | 2.2 |
| Transportation, Communications, & Other Public Utilities | 1,425 | 1,945 | 2,187 | 2,276 | 2,371 | 184 | 8.4 |
| Wholesale & Retail Trade | 6,108 | 7,766 | 8,585 | 8,899 | 9,147 | 562 | 6.5 |
| Finance, Insurance, & Real Estate | 652 | 765 | 903 | 952 | 991 | 88 | 9.7 |
| Services | 4,599 | 5,498 | 6,503 | 6,894 | 7,335 | 832 | 12.8 |
| Government | 4,000 | 5,900 | 8,044 | 9,014 | 9,833 | 1,789 | 22.2 |
| Federal | 1,900 | 2,300 | 3,285 | 3,812 | 4,234 | 949 | 28.9 |
| State & Local | 2,100 | 3,600 | 4,759 | 5,202 | 5,599 | 840 | 17.7 |

SOURCE:

Pennsylvania Office of State Planning and Development, Pennsylvania Projection Series, Report No. 73
 PPS-2, Employment (Harrisburg, Pa.: November, 1973). Changes computed by CRPDA.

To get a general idea of future land use patterns surrounding the Study Area, two sources were consulted: the Tri-County Regional Planning Commission's Year 2000 Land Use Plan and the Comprehensive Water Quality Management Plan, Study Area 3, Selected Future map, developed as a composite of information gathered from the counties by Gannett, Fleming, Corddry and Carpenter, Inc. Both sources illustrate that substantial new growth will parallel primary and secondary roads in the County; specifically, U.S. Route 22 and Interstate 81 from Colonial Park to the eastern portion of West Hanover Township.⁵ Development is shown to be linear north of Harrisburg as Susquehanna, Lower Paxton and West Hanover Townships experience growth from an expanding Harrisburg City core. Dauphin Borough is also expected to grow north along Route 225 and east into Middle Paxton Township.

Lebanon County: Future Land Use Characteristics

The Revised Future Land Use Map, developed by the County Planning Commission, and the Selected Future map depicting growth in Lebanon County illustrates a similar trend to that of Dauphin County. According to data and consultation with the Planning Commission, growth will follow a linear pattern from Lebanon City and Palmyra. Closest to Stony Creek Valley, Jonestown is expected to experience continual growth along Route 22, while Interstate 81 is predicted to encourage development along its corridor.⁶

Unlike Dauphin County, Lebanon possesses a higher portion of land use devoted to surface mining and governmental land. Public land uses are expected to increase, while little change is projected for increased mining acreage in Lebanon County.⁷

Existing Uses of Stony Creek Valley

Stony Creek Valley is host to a number of recreational uses, most of which are associated with and compatible to large, natural, semi-wilderness areas found across Pennsylvania. All of these activities are enhanced by, and some of them dependent upon, the quantity and quality of natural resources found within the watershed. But perhaps the most significant factor is the recreational opportunities offered by this watershed of such close proximity to one of Pennsylvania's most populated metropolitan centers.⁸

The recreational activities listed in Table 4 have been compiled by reference to three ecological studies commissioned by the Pennsylvania Power and Light Company and the Metropolitan Edison Company. These studies will be referred to as: Gash and Friday, 1972, Denoncourt, 1973, and Denoncourt, 1974. Also used to compile this list and other information on recreation were surveys and interviews done by the Stony Creek Study Team, including questionnaires sent to user groups and educational centers in South Central Pennsylvania. A random survey conducted for a master's thesis by a Penn State, Middletown Campus, graduate student was also used and is summarized at the end of this section. Finally, a study compiled by the Stony Creek Valley Coalition in 1976 for the Study Area 3 Comprehensive Water Quality Management Plan (COWAMP) regional environmental amenities inventory was used and cited throughout this report.

TABLE 6

| | |
|----------------------|-----------------------------------------------------|
| Fishing | Painting/Sketching |
| Hunting | Dog Sledding |
| Hiking | Fall Drive-thru (sponsored by Game Commission) |
| Bicycle Riding | Bird Watching |
| Cross Country Skiing | Nature Study |
| Orienteering | Snake Hunting |
| Snowmobiling | Snowshoeing |
| Horseback Riding | Archaeological digs/artifact and metal searching |
| Photography | |

Figures 13, 14, 15, 16, 17 illustrate the areas of recreational uses documented in the Valley. In addition, areas affording public recreation opportunities within Stony Creek Valley are listed in Appendix B.

Because of the diversity of recreational activities in the Valley, only those considered as "major" uses are discussed in detail, with the remainder of uses discussed under "other recreational uses".

Fishing

All of the information researched indicate that fishing is by far the most popular single use of the Valley. Although there has been evidence of natural trout reproduction in the headwaters of the Creek, most of the trout fishing is "put and take".⁹ The majority of stocking is done by the Pennsylvania Fish Commission, which is necessary to satisfy the heavy demand during the fishing season from mid-April thru October. The stocking and catch records are summarized as follows:

| <u>Date</u> | <u>Trout Stocked</u> | <u>Estimated Catch</u> |
|-------------------------|----------------------|------------------------|
| 1956-1972 ¹⁰ | 169,340 | N/A |
| 1973 ¹¹ | 16,050 | 5,496* |
| 1974 ¹² | 22,989 | 19,497 |

*Number based on personal selected interviews of trout fishermen during 1973 season.

In the Denoncourt 1973 report, it is estimated that approximately 4,849 fished the stream during the 1973 season, while 8,788 anglers are reported for 1974 in the Denoncourt 1974 study.

A survey conducted by Study Team members on the opening weekend of Trout Season, April 15-16, 1978 at the Cold Spring entrance, estimates a total of 475 anglers using the Valley for this purpose.¹³

The areas from which these anglers come are as diversified as the recreational uses are themselves. Denoncourt 1973 reports that of interviews taken with 4,849 anglers, 85 different municipalities were represented, while 28 were from out-of-state. In his 1974 report, Denoncourt records 104 municipalities represented from 8,788 interviews, while 24 of the anglers were from out-of-state.

The quality of fishing in the Valley is documented by such user groups as Trout Unlimited and the Dauphin County Federation of Sportsmen.¹⁴ In addition to trout, Denoncourt, 1974 reports 32 species of fishes taken regularly by anglers, including chain pickerel, creek chubs, fallfish and white suckers. All of these factors, the stocking records, number of anglers and quality of fishing reported, attest to the stream's popularity among local and out-of-state visitors to Stony Creek Valley.

Hunting - Small Game and Deer

The entire study area, although not entirely owned by the Pennsylvania Game Commission, is managed as State Game Lands. Hunting, especially deer, accounts for another major use of the Valley. Very little data exists on this use since none of the aforementioned surveys were taken during the small game or regular deer seasons. Also, little information was obtainable from the Pennsylvania Game Commission. While Denoncourt did not tabulate hunters due to their mobility, they were "regularly seen during the spring turkey season and fall bow hunting seasons".¹⁵

Surveys taken by the Stony Creek Valley User Questionnaires and interviews on selected hunting days indicate heavy use during deer and small game season. On Saturday, October 14, 1978, opening day of small game season, eight vehicles were reported at the Cold Springs Gate, 28 cars were counted at the Gold Mine Entrance, while 19 were reported at Ellendale.¹⁶ (This low number is attributable to the cold, rainy weather.)

On the opening day of turkey season, Saturday, October 28, 1978, 32 vehicles were counted at Cold Spring, 38 at Gold Mine and 32 at Ellendale.¹⁷ It should be recognized that this car count may not be completely accurate; the actual number of people were not recorded, nor was the actual use of those entering the Valley on both days documented.

The opening day of antlered deer season attributes to an even heavier use of the Valley. In 1977, as many as 200 cars were recorded in the parking lot at Cold Spring on the opening day of this season.¹⁸ On Monday, November 27, 1978, 87 were reported at Cold Spring, 74 at Gold Mine and 63 at Ellendale.

The quality of hunting in the Valley is documented by surveys taken in the hunting community who use this area. Interviews taken by local hunters in Dauphin and Lebanon Counties report that ruffed grouse, gray squirrels, wood duck and woodcock are taken from the Valley during the hunting season.¹⁹

When considering the proximity of the Valley to the Harrisburg metropolitan center and the diversity of wildlife, it is not surprising that the study area receives such heavy use during the hunting season.

Additional Hunting

Although not necessarily supported by the Game Commission, there is another type of hunting, snake hunting, that has also been documented. Denoncourt recorded 45 snake hunters in his 1973 study and 39 in the 1974 report. Organizations such as the Yellow Springs Hunting Club have conducted group hunts in the study area.²⁰

Hiking

Seldom in the eastern United States does the backpacker and dayhiker find an area the size of Stony Creek Valley which is completely free of vehicular traffic. All of the vehicular access points to the Study Area are of low density type and are located in such ideal situations that once the hiker is a quarter mile away from them he can hike uninterrupted by the signs of civilization for many miles enjoying the pleasures of a true wilderness setting.

The variety of hiking experiences within one area is another unique feature of Stony Creek Valley. One can choose to hike a ridgetop enjoying tremendous vistas, a valley amongst unique and rare plants and a pure cold mountain stream or trails to unique historic and geologic points. Due to the past activities of man in the Valley, we find now a second growth wilderness area which is spiced with many remains of a past era of exploitation by mining, logging and railroading which have written the Valley's past history. Nature has largely healed these past scars and now offers the hiker a near pristine wilderness experience unequalled in size and quality in southeastern Pennsylvania.

Many clubs, such as the Hemlock Group (York) of the Sierra Club, the Allentown Hiking Club, the Eastern Lebanon County (ELCO) Hiking Club and Susquehanna Appalachian Trail Club have regularly scheduled hikes in the Valley.²¹ Surveys taken indicate that the area receives even greater use by club members on an individual basis.

Wildware, an outdoor outfitting store in Harrisburg, conducts organized hikes each month in the Valley as part of their free Sunday hikers program. An average of 10-15 people participate in each hike and as high as 30 are reported by the Store as hiking the Valley on any one scheduled day.²²

Many hikers pass through the area as part of a longer hike on the Appalachian Trail(AT). Approximately 10.2 miles of the AT pass through the Valley, 6.2 in Lebanon and 4 in Dauphin.²³ The Trail offers a unique experience to hikers, according to one Penn State publication entitled, The Appalachian Trail, Guidelines for Preservation, in that it passes through an area rich in historic, natural and unique geological areas.²⁴ Some consideration is being given to developing "loop trails" connecting the Trail to a greater number of these features.²⁵

ACCESS POINTS FOR HIKERS

Vehicular Access Points

| | |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ellendale Gate | Provides Access to - Railroad Bed Trail Upper Cabled Service Road Trail (Old Stagecoach Road) Water Tank Trail Horseshoe Trail Appalachian Trail Rattling Run Trail |
| Cold Spring Gate | Provides Access to - Railroad Bed Trail Old Wagon Road Trail Cold Spring Trail Appalachian Trail Yellow Springs Trail Horseshoe Trail |
| Gold Mine Gate | Provides Access to - Railroad Bed Trail Sand Spring Trail Appalachian Trail |
| Clarks Valley | Provides Access to - Appalachian Trail Upper Cabled Service Road Trail (Old Stagecoach Road) |

Trail Access Points

| | |
|-------------------|----------------------------------------|
| Greenpoint | Provides Access to - Appalachian Trail |
| Rt. #443 Entrance | Provides Access to - Horseshoe Trail |
| Rt. #325 Entrance | Provides Access to - Sand Spring Trail |

Trail Descriptions

Appalachian Trail

This trail traverses the central part of the wilderness area in a southwest to a northeast direction. If one were hiking the trail north from Georgia you would enter the wilderness from Clarks Valley and traverse the northern exposure of the mountain which is profuse with ferns and rock outcroppings. When the trail reaches the top of the mountain, it levels out and travels along the ridge for several miles. While traveling along the top of the ridge, it passes through the remains of an old coal mining community called Yellow Springs. After leaving Yellow Springs, the trail travels several more miles along the top of the mountain before dropping down into Stony Creek Valley and the only overnight shelter on this section of trail, the Rausch Gap Shelter (See Figure 12). The trail then crosses the railroad bed, Stony Creek, then up over Second Mountain to Green Point, the northeast access point.

Horseshoe Trail

The Horseshoe Trail originates near Valley Forge, Pennsylvania and terminates at its junction with the Appalachian Trail in Stony Creek Valley. It enters the Valley from the south along Pa. Rt. 443 near Piketown. After crossing Second Mountain it comes down into Stony Creek Valley, crosses the creek and railroad bed then travels up Stony Mountain to its junction with the Appalachian Trail.

Watertank Trail

This is a short trail that leaves the railroad bed about two miles east of the Ellendale gate and follows the path of an old inclined plane, which was once used for lumbering, up Stony Mountain where it joins the upper service road.

Rattling Run Trail

This trail starts outside the Study Area, along the pipeline approximately 1/2 mile west of the Ellendale gate, where Rattling Run stream crosses the railroad bed. This trail, also known as the Upper Cabled Service Road, provides access to the headwaters of Rattling Run and to the Devil's Racecourse, one of the most scenic geologic features along the trail.

Yellow Springs Trail

This trail, like the Watertank Trail, follows the course of an old abandoned inclined plane; this one, however, was believed to have been used to haul coal out of the Yellow Springs mines to the railroad bed for loading. It starts at its intersection with the railroad bed, then travels in a northern direction up the inclined plane foundation past several large seepages of acid mine drainage. It then intersects the Appalachian Trail at the top of the mountain near the Yellow Springs village site.

Cold Spring Trail

This trail provides access to the top of the mountain from the Cold Spring parking area to the Appalachian Trail.

Sand Spring Trail

This trail originates at its intersection with the railroad bed two miles west of the Gold Mine gate. It then intersects the Appalachian Trail at the top of the mountain then travels down the north slope crossing Clarks Creek and ending at Pa. Rt. 325.

Bicycling

Perhaps the most unique feature of the Valley is the 17.5-mile long railroad bed, which provides a bike trail from one end of the Valley (Ellendale) to the other (Gold Mine). The railroad bed receives heavy use of both bike clubs and individual cyclists. Both the York

Bicycle Club and Harrisburg Club are reported to conduct organized rides on the trail.²⁶

In the Denoncourt 1973 report, it is reported that bicycling accounted for 40% of the nonfishing, nonhunting use while his 1974 study shows an increase to 60%.

An article appearing in an August 1975 "White Rose Motorist" magazine perhaps summarizes the popularity of the Valley for bicycling:

At last - the perfect bicycle trail. It is located within an hour's drive of York, has good solid surface for cycling, is completely free of hills as well as from automobile or motorcycle traffic and extends for 17 miles through thick woodland, replete with wild flowers, mountain streams and wildlife.²⁷

Other Recreational Uses

There are a number of uses which can be categorized as "nature study or enjoyment". These include bird watching, painting, sketching and photography. For many, these activities are probably most pleasurable during the fall foliage season. It is during this season when the Pennsylvania Game Commission opens the gates to allow a "fall drive thru". Although it is not an annual occurrence and receives little advance publicity, sightseers and pleasure drivers watch for the occasion. One survey reports over 600 cars passing through during the 1976 event.²⁸

Another activity centered on the railroad bed and during the fall season is horseback riding. In his 1974 study, Denoncourt records over 30 horseback riders in October. Such groups as the Central Dauphin 4-H Horse and Pony Club and the Blue Ridge Riding Club conduct rides through the Valley in the fall.²⁹

Winter sports are increasing in popularity in the Valley. Although studies were conducted before and after the winter season, users of the Valley report snowshoeing, cross country skiing, winter hiking, snowmobiling, as well as dog team training and runs.³⁰ Although these activities are spread across the Valley, snowmobiles are allowed only on the railroad bed and the railroad bed is the only suitable trail in the Valley for dog sleds. About 15 members of the Pennsylvania Sled Dog Club usually begin training their dogs in the Valley just after Labor Day using wheeled carts and continue with sled dog teaming throughout the winter.³¹

Although not necessarily to be encouraged, remains of old villages such as Rausch Gap, Yellow Springs and Cold Springs, plus the remains of an Indian Village provide opportunities for controlled metal searching and artifact hunting. It should be noted that all archaeological digging on State Game Lands is controlled through the issuance of permits available from the Pennsylvania Game Commission.

Stony Creek Valley is also used for educational purposes. According to a survey of areawide schools, a number of schools such as

the Lebanon Valley College and the Susquehanna Township School district conduct field trips for ecological studies.³² Several Penn State, Middletown Campus, graduate students have used the Valley as a setting for their master's theses. Also, Northern Lebanon High School performed a controlled archaeological dig at Rausch Gap.³³

Finally, some other uses reported for the Valley include swimming, wading, jogging, and orienteering.

Recreational Use: Two Independent Surveys

In attempting to make basic conclusions on the recreational use and users of the Study Area, two surveys may be used as reference. The first one was taken by a member of the Study Team on three consecutive weekends in the fall of 1978. The second was conducted by John Wyandt, a graduate student at the Penn State, Middletown Campus, for the completion of requirements in the Master of Urban and Regional Planning program.

When examining the results of these surveys, one should keep in mind the difficulty of the task: (1) many users are mobile, entering and leaving the Valley at different points, (2) many users who enter may be doing so for a variety of purposes - fishing and hiking for example, and (3) the time period for conducting such surveys was limited to the scope and time requirements of the Wild and Scenic Rivers study itself.

Study Team Survey

One indication of the heavy use of the Valley during the fall season is the number of vehicles found at the entrances or main access points. The first survey is summarized as follows:

| <u>Location</u> | <u>October 15, 1978</u> | <u>October 22, 1978</u> | <u>October 29, 1978</u> |
|-----------------|-------------------------|-------------------------|-------------------------|
| Cold Springs | 90 (1-4:30 PM) | 90 (1-4:30 PM) | 68 (2-5:30 PM) |
| Gold Mine | 40 (3-6:30 PM) | 70 (3-6:30 PM) | N/A |

No counts were made at the Ellendale Gate although widely recognized that the entrance at the Ellendale Gate is the most popular access to the Valley.

Penn State Questionnaire and Survey

As stated earlier, in 1977 a Penn State graduate student conducted a survey of recreational users of the Valley. Due to the limits of this study, the methods of this survey will not be detailed. However, the highlights of conducting the fourteen (14) day survey at nine different locations can be summarized as follows:

Out of 159 people responding, 58 indicated that this was their first visit to the Valley. Of 166 responding to the question of recreational importance of the Valley, 126 indicated the Valley was important to them, while the remainder expressed a neutral (36), insignificant (1), or no answer response (3).

To the question of "County of Residence", 166 responses were given with Dauphin comprising 63 of the results, Lancaster 23, and York ranking third with 17. The remainder of the responses were from a diversity of areas across the State and three responses were from Maryland while one was from Virginia.

The complete results of this survey are included in Appendix C and individually collected surveys are obtainable from the Study Team.

Although much more can be said about the quantity and quality of recreational opportunities in the Stony Creek watershed, perhaps it is best summarized by Samuel P. Hays, of the Pennsylvania Chapter of the Sierra Club, in his paper entitled, "Stony Creek, A Unique Pennsylvania Asset":

The recreational value of a wilderness area may also be judged in terms of its proximity to centers of population which might enjoy either its direct use or its indirect use. The uniqueness of Stony Creek lies not simply in its size and its wilderness quality, but also in its location. It is only a dozen miles or so from Harrisburg, one of the larger urban centers of the State, and relatively near the entire southeastern Pennsylvania metropolitan area. It is, thus, far more accessible than are more remote wilderness areas. A major element of the new recognition of the value of wilderness areas to the general public is the belief that they should be located nearer to the centers of population. Certainly, Stony Creek is a classic example. The value of such a wilderness area so located is enhanced enormously.³⁴

In addition to the Stony Creek Valley affording visitors many diverse recreation opportunities, the Creek itself is economically significant as a public water supply source. The Dauphin Consolidated Water Company currently withdraws approximately five million gallons of water per day (MGD), with plans to increase that withdrawal capacity to nine MGD in the next two years. At present, the water supplied by Stony Creek serves approximately one-half of the Dauphin Consolidated Water Supply Company customers, and with the planned increased withdrawal capacity the Creek will serve about two-thirds of the Company's customers.

The vast timber resource covering the entire study area is an important economic asset. The Pennsylvania Game Commission's management of this resource will be discussed in a later section of this report.

Additional Influences on Surrounding Development and Use of Stony Creek Valley

A number of influences on the development of land surrounding the Study Area have been mentioned; increasing population, local economic trends and transportation arteries in both counties. Additional factors influencing the growth and related activities in and around the Valley to be considered include: Harrisburg Revitalization, River Relief Route, and Existing Local Land Use Plans. These items are covered briefly in the proceeding discussion.

1. Urban Redevelopment and Harrisburg Revitalization

The redevelopment of downtown Harrisburg is viewed by some as being a "catalyst" for the stimulation of growth and development in this region.³⁵ The construction of such major projects as "Harristown" is expected to encourage urban living and commercial reinvestment in the City. These projects may see a reversal, in time, of the current urban out-migration pattern and the rising demands for recreation and open space in surrounding areas. The increased demand for such amenities by the urban and suburban dweller is documented in the Pennsylvania State Recreation Plan which states, "the densely populated metropolitan and less dense suburban communities have the fewest resources for meeting recreation needs. The intensity of development and high land costs virtually assure a continuing shortage of recreation resources."³⁶ The Plan also suggests that "rapid and unplanned" growth in the expanding suburban communities has resulted in much of the prime recreation land being swallowed by residential, industrial and commercial interests.³⁷ Therefore, with increased urbanization the local governments in and around Harrisburg and especially those surrounding the Study Area will, in the near future, have to coordinate and comprehensively plan development and recreation activities.

2. Harrisburg River Relief Route

In the summer of 1978, the northernmost spur of the River Relief Route (LR 1089) was completed and open to traffic. Once clogged by Friday night and Sunday evening weekend traffic, the "Dauphin Narrows" has become more accessible by way of this highway and encourages visitors from many points in South Central Pennsylvania.

According to statistics obtained from the Pennsylvania Department of Transportation (PennDOT), an increase in average daily rate from 29,000 automobiles to 45,400 will occur between 1975 and 1995 through the "Narrows".³⁸ This projected doubling of traffic further illustrates the popularity of the area north of Harrisburg which will be facilitated by the final completion of the River Relief Route. The future growth and development spurred by this highway can only be predicted in terms of experience gained in other regions where major highways pass through relatively open, undeveloped lands. The detail required in doing this analysis is perhaps a topic for subsequent studies and not of this document.

3. Existing Local Land Use Plans

Another important indicator of future growth and development trends are local land use plans. In these plans, local goals and objectives as well as specific land use controls are established for implementation in the community.

The following townships (and Dauphin Borough) surrounding Stony Creek Valley in Dauphin and Lebanon Counties currently have or are in the process of developing the following plans and controls³⁹ (See Table 5).

TABLE 7

EXISTING AND CURRENTLY DEVELOPING LOCAL LAND USE PLANS

| | Comprehensive Plan | Zoning Ordinance | Local Subdiv. Ordin. | Use County Subdiv. Ordin. |
|------------------------------------|-----------------------|---------------------|----------------------------|------------------------------------|
| <u>DAUPHIN</u> | | | | |
| Dauphin County | X | | | X |
| Dauphin Borough | | X | X | |
| Townships: | | | | |
| West Hanover | X | X | X | |
| Jefferson | | | | X |
| Middle Paxton | * | * | * | X |
| Rush | | | | X |
| Wayne | | | | X |
| <u>LEBANON</u> | | | | |
| Lebanon County-Local Land Use Plan | | | | X |
| Townships: | | | | |
| Cold Spring | | | | X |
| East Hanover | X | X | | X |
| Union | X | * | | X |

*in process of development.

A terse review of these plans indicates that there are a variety, but not necessarily conflicting goals and objectives perceived by the communities surrounding the Valley. One point is clear, however, local officials and their constituents are taking more seriously the business of natural resource and environmental protection. A more detailed discussion of local land use planning policies can be found under the "Proposed Plans and Projects" section of this report.

In conclusion, the growth and development around Stony Creek Valley is dependent upon a number of interrelated factors, the major ones being covered in this discussion. The current and future use of the Valley is also principally related to the growth and recreational demands of the inhabitants who live and will potentially live in this area. The adequacy and effectiveness of local government actions, comprehensive planning efforts and the local citizenry on directing future growth and providing recreational benefits depends upon the goals, objectives and commitments of all those involved in making land use decisions for future generations.

Existing Intrusions

The Stony Creek Valley provides a blend of history with the solitude that can only be experienced in a wilderness setting. The Valley, once a center of economic activity devoted to the extraction of abundant coal and lumber resources, now lacks any evidence of human permanence. Only the crumbled remnants of a past era remain for visitors to investigate and explore as one would a work of literature or an unsolved puzzle. Ruins of once thriving settlements, though largely reclaimed by nature, can still be seen at Cold Springs, Rausch Creek, and Yellow Springs. The abandoned railroad bed remains as a monument to a way of life long since past. Abandoned deep mines and an occasional small stripping dot the headwater areas and downstream reaches of each Stony Creek tributary.

The only other intrusions in evidence today incur little, if any, visual impact upon the waterway corridor. These intrusions include: (1) a pipeline right-of-way which crosses the headwaters area of study corridor near Rausch Gap (2) the unimproved access road to Cold Springs and the land there established as a parking area and (3) the game food plots mechanically constructed by the Pennsylvania Game Commission.

Proposed Plans and Projects

Pennsylvania Game Commission Management Plan⁴⁰

The plans and projects which guide the management and use of the study area and surrounding areas could drastically impact the future of Stony Creek Valley. The Game Commission has developed a plan for the management of State Game Lands No. 211 as a wildlife habitat area. The Forest Management Procedures adopted by the Commission for Game Lands 211 are broken down into several categories including, (1) Access Road Construction and Maintenance, (2) Special Areas, (3) Preservation Areas, and (4) Timber Management to Improve Wildlife Habitat. The Management Procedures prescribed for each aforementioned category are detailed in subsequent paragraphs.

Access Road Construction and Maintenance

1. Construction of a service road to begin off abandoned railroad grade at drainage divide between Stony and Fishing Creeks (at a point approximately 1 mile east of Rausch Gap) and ending at Township Route #340, a distance of approximately 4 miles.
2. Construction of a service road eastward from Township Route #340 for a distance of approximately 12.2 miles. Maintenance of the service roads will include minor grading, seeding of roadway and disturbed areas and maintenance of cross drainage. The construction of both service roads will be initiated as timber sales are proposed on the south side of Stony Creek; segments will be expanded with each timber sale.
3. Maintenance of the abandoned railroad grade will include grading, resurfacing with stone and maintenance of culverts and bridges.

Special Areas

Special wildlife management areas include food plots, pipe lines and electric transmission rights-of-way. This also includes border cuttings along roads and food plots. All of these areas should be maintained to herbaceous or shrub type vegetation. The watershed includes 135 acres in this category varying in size from 1 to 7 acres. Our normal acreage of this type of development in predominately forest cover should be 2 to 5% of the total acreage (16,684 acres). This would range from 333 to 834 acres. Therefore, there is a deficiency in this category ranging from 198 to 699 acres.

Development of additional open acreage, in conjunction with timber sales, is considered a high priority on this watershed.

These areas are important in the turkey habitat requirements in that they serve as nesting areas. Both deer and rabbits make extensive use of these areas.

Also included in this category is strip mine treatment. There is evidence of strip mine activity in and around Rausch Gap. Although not extensive, the small areas require treatment. There is an acid discharge into Rausch Creek within Compartment 23. Exploratory pits are also in the same Compartment along with an abandoned shovel. These areas will require treatment. There are no plans now or in the foreseeable future to conduct strip mine operations within the drainage, however, the Commission must reserve the right to conduct strip mine activity subject to Commission Policy:

Coal shall not be removed from Pennsylvania Game Lands by the method commonly known as stripping or open-pit mining, except upon approval of the Commission, and where the following conditions singly or in combination are present:

(a) The proposed mining project includes a significant amount of reclamation of previously mined and abandoned areas.

(b) Field investigations indicate that definite long-term habitat improvements could be accomplished through conversion of present site and cover conditions to an arrangement of planted openings.

(c) Acceptable replacement surface lands are offered as total or partial remuneration for any royalties due from the proposed operation.

Any strip mine activity would be subject to existing laws and regulations.

Preservation Areas

Areas in this category include both the Appalachian Trail and Horseshoe Trail that traverse the watershed. A buffer strip with a minimum distance of 100 feet on each side of the trails will be reserved to protect the trails. Timber operations within that zone will be limited to salvage cuts in instances where fire, gypsy moth or other infestations cause mortality. Small clearings may be required along or off the trails at suitable locations for scenic vista points. In addition, the ruins of the old villages of Rausch Gap, Yellow Spring Gap and Cold Springs and related appurtenances will be included in this category.

Timber Management to Improve Wildlife Habitat

This State Game Lands is in predominately timber cover. Approximately 8,598 acres or 52% of the area is non-operable and 8,086 acres or 48% of the area is operable.

a. Non-Operable

The non-operable acreage refers to areas that are non-operable for commercial timber sales for various reasons including terrain that restricts any type of timber operation and sites that have poor growth and minimal reproductive capacity, both an expression of existing soil conditions.

Certain practices may be applied by our work force to some of these areas. These might include release cuttings for laurel, conifer or grape release or species composition changes.

b. Operable Areas

Forested land having an opportunity for commercial timber operations is further classified as follows:

1. Uneven-aged Management Areas

The uneven-aged management areas are in the mixed oak, hemlock-white pine and northern hardwoods cover types. These are usually buffer zones along major roads and streams. Sufficient acreage has been added to these areas to enhance their value for wildlife and to make these stands of a manageable size for timber harvesting.

The uneven-aged management area will receive periodical thinnings to remove mature and cull trees, except den trees, leaving the smaller trees to grow to maturity. Reproduction will occur in the small openings created by removal of individual trees or small groups of trees. Technically known as "high thinning," this system favors tolerant tree species.

The Land Manager and Forester will determine the time and area for treatment as the wildlife needs may demand. The following areas should be considered for timber stand improvement cuts either commercially or by our own work force: Cover type 29 along Stony Creek in Compartments 6, 7, 16, 17, 19 and 23. These areas should be maintained in the present hemlock-white pine cover type.

2. Even-aged Management Areas

The even-aged management area, which includes the remaining operable area, is primarily made up of trees in the large pole to small sawlog size class. Only 56 acres in even-aged management are classified as sawtimber. Due to past gypsy moth infestations, salvage cutting may be considered for some areas. This would result in pulpwood and small scale sawlog operations.

The even-aged management area will receive treatment based on a 100-year rotation. 1/100th of the area will be harvested each year by a regeneration cut. Ultimately, this will result in an all-aged forest composed of many individual even-aged stands, with a variety of food and cover conditions spread out over the entire game land. The stands will represent every age class from 1 to 100 years and, consequently, every stage of forest growth from brush to mature timber. Even-aged management is necessary to perpetuate intolerant species such as black cherry, tulip poplar and hickory. The tolerant and intermediate species, including oaks, ash, white pine and red maple, will also be regenerated under this system.

a. Intermediate Cuttings

Intermediate cuttings will consist of Timber Stand Improvement to prepare the stand for a future regeneration cut. Timber Stand Improvement will be executed either commercially or non-commercially. Crop trees, with trainer trees, from a dominant or co-dominant position, will be allowed to grow to maturity. Suppressed, intermediate, and some dominant and co-dominant trees will be removed in two or three cuttings during the 100-year life of the stand. This is technically known as "thinning from below."

Areas to receive intermediate cutting will be selected by the Forester and Land Manager. Decisions will be influenced by need of browse, need of mast tree release, condition of stand, soil interpretation, road layout and need for regeneration cut preparation.

b. Harvest or Regeneration Cuttings

The following treatments will be implemented:

1. Clear cut - strip cutting can be used in suitable locations.
2. Shelterwood
3. Seed tree

Areas for regeneration cutting should be selected so as to obtain as much variation as possible of size classes in each Compartment and, ultimately, a balance of all size classes over the whole game land.

Pennsylvania Power & Light/Metropolitan Edison Companies Project Proposal⁴¹

The proposal by Pennsylvania Power and Light Company and Metropolitan Edison for use of 1,702 acres of the study area involves the construction of a pumped storage hydroelectric facility. According to project specifications, the facility would consist of two reservoirs and an underground pumping-generating station. The proposed development would be located about four miles within the western boundary of the study area. The project would involve the construction of two impoundments - a lower reservoir on the valley floor and upper reservoir where the summit of Third Mountain splits into Stony and Sharp Mountains. A dam approximately 2,000 feet in length, and about 130 feet high would form a reservoir occupying 600 acres of the valley floor and having a maximum depth of 100 feet. The total storage capacity of the reservoir would be 25,800 acre-feet. The lower reservoir would occupy about 4.5 miles of Stony Creek with additional flooding rights that could extend 5.5 to 6 miles. The upper reservoir would occupy a 264 acre area and have a

storage capacity of 22,900 acre-feet. The pumping generating facility is planned for an underground location between the upper and lower reservoirs and would contain six reversible pump-turbine units. Each unit would have a generating capability of 285 megawatts for a total capability of 1,710 megawatts. The flow exchange between the two reservoirs would occur through tubes tunneled through Sharp Mountain. Of the 1,702 acres involved, approximately 900 acres would support the pumped storage facility and the remaining acreage would be available for present usage.

Project Concept

The Project will be a conventional recirculating pumped storage facility having a capacity of 1,710 MW and estimated to cost approximately \$265 million at 1973 price levels. It will make the fullest possible use of (1) a topographic configuration wherein the summit of Third Mountain bifurcates into Stony Mountain and Sharp Mountain creating a site for the Upper Reservoir, (2) a relatively precipitous drop of about 1,000 feet providing the necessary head for a hydraulic development, (3) the Stony Creek Valley, having a drainage area of 21.1 square miles at the Project wherein a suitable Lower Reservoir can be conveniently constructed, (4) the existence in the systems of the Applicants of load characteristics and other generating facilities permitting the addition in the early 1980's of a substantial block of limited-energy peaking capacity, and (5) access by the Applicants to large amounts of low cost off-peak energy within their own systems, or within the systems of those with whom routine interconnection agreements now exist.

The general concept of the Project is that water will be impounded in the Lower Reservoir from the flow of Stony Creek, and pumped from the Lower Reservoir to the Upper Reservoir during the off-peak hours of the Applicants' systems, following which it will be returned from the Upper Reservoir to the Lower Reservoir during on-peak hours to generate electrical power.

Although the primary purpose of the Project is to provide an economical addition to system generating facilities in order to serve the growing load of the Applicants, it will be of public benefit in other ways. Among those are:

- (1) Improvement of recreational facilities available to the public.
- (2) Improvement in water supply through augmentation of existing low flows in Stony Creek. The Project is planned so that a minimum regulated discharge of 3.2 cubic feet per second (cfs), or 2.1 million gallons per day (mgd) will be provided rather than the 0.70 cfs minimum flow calculated to have occurred during the driest day of the available records.

- (3) Flood benefits in the form of reduction of flood peaks.

The following pertinent information relative to the Project structures, in addition to that stated previously, is as follows:

- (1) The Lower Reservoir will be formed by a dam approximately 2,000 feet long and 130 feet high across Stony Creek. The dam will be of earth and rock fill utilizing materials which will be excavated as part of the construction of other project structures.
- (2) The Upper Reservoir will be formed by the construction of a dam 168 feet in maximum height and approximately 2,000 feet long across the depression between the ridges of Stony Mountain and Sharp Mountain and an enclosing dike 65 feet in maximum height and approximately 13,000 feet long. The dam and dike will be fill structures of materials excavated from within the outer limits of the dam and dike.

Each reservoir will provide 19,100 acre-feet of storage for power operation. This amount of water will produce approximately 16,600,000 kilowatt-hours of energy when it is discharged from the Upper Reservoir through the pumping and generating station to the Lower Reservoir, thus permitting full-load operation of the project for more than 9- $\frac{1}{2}$ hours, or longer operation at part load.

- (3) A system of steel and concrete lined shafts and tunnels will connect the Upper and Lower Reservoirs with the underground pumping and generating station. Additional shafts and galleries will be provided to protect against surges in the water passages, and for other purposes.
- (4) The pumping and generating facilities will be located in an underground pumping and generating station tunneled in rock, and will consist of six units with a total generating capacity of 1,710 MW when operating at the minimum net head of about 840 feet. The pumping and generating station will also contain the station step-up transformers, switchgear, and auxiliaries.
- (5) The access tunnel, access shaft and vent shaft will connect the pumping and generating station with the surface, and will provide normal and emergency access and exit and ventilation.
- (6) The project transmission facilities will consist of high-voltage circuits in a vertical shaft, connecting the transformers in the pumping and generating station with the Ellendale Switching Station located near the Upper Reservoir. The switching station will be a part of the regional transmission system, and will not be a part of the Stony Creek Project.

- (7) A recreation area will be established along the north shore of the Lower Reservoir between the Lower Reservoir dam and intake. The recreational facilities will provide for fishing access, picnic facilities, hiking trails, overlooks, game feeding areas, boating and sanitary facilities.

Incidental to construction of the project will be the relocation of approximately 5 miles of the Pennsylvania Game Commission existing road along Stony Creek to avoid inundation by the Lower Reservoir, as well as improving other Commission roads between Ellendale Forge and the project site and other roads leading to the project.

Certain new high-voltage transmission lines and the associated Ellendale Switching Station will be constructed partly or wholly within the project area but will not be a part of the project. These facilities would be built in the general area whether or not the Stony Creek Project is constructed.

Municipal Plans

A comprehensive review of the stated goals and objectives documented within the involved municipalities' comprehensive plans reveals nearly complete compatibility with the intent and purpose of the designation of Stony Creek and the adjacent visual corridor as a component of the State Scenic Rivers System. The municipal goals and objectives which apply to lands such as are found within the Stony Creek Study Area (i.e. open, floodplain, steep slope, forested) are discussed below.

It is the adopted land use planning prerogative of Lebanon County: (1) prohibit urbanization on lands proposed as regional recreational areas and prohibit development on or near major hiking trails which would impair surrounding natural and scenic qualities, (2) minimize impacts of development on cold water streams by prohibiting incompatible or detrimental development near cold water streams, (3) preserve the unique cultural and educational values of historic areas, and (4) preserve conservation streams and their watersheds so that high water quality is maintained and sensitive aquatic and terrestrial ecosystems, wilderness and natural characteristics, and aesthetic and recreational values are conserved. Union Township, within Lebanon County, has adopted these aforementioned County policies. East Hanover Township (Lebanon County) has, however, specified within its comprehensive plan the following land use prerogatives: (1) the conservation and preservation of floodplain areas, (2) the protection of inherent agricultural land, (3) the preservation of open space and aesthetically appealing lands, and (4) the promotion of orderly growth and development.

The land use goals and adopted policies of Dauphin County correspond with those of Lebanon County except that Dauphin County does not have a stated goal for conservation streams and their watersheds. A review of the proposed comprehensive plan of Middle Paxton Township (Dauphin County) provides the following evidence of compatibility with the possible State Scenic River designation of Stony Creek.

"It is important to take the 'hands-off' approach to all natural drainage channels. These are nature's storm water control facilities and man gets in trouble when he violates them. Any encroachment is improper. It is also wrong when additional waters are directed to these channels in an amount (velocity) that overloads them. The result is bank overflow and lower area flooding.

Conservation principles should also be applied to steep slopes (over 20% grades). There are 6,610 acres of slope land not including any in the State Game Lands. Thus, there is a possibility of erosion damage if too much clearing of natural vegetation was permitted. Therefore, along stream banks, in floodplain areas and on steep slopes it is recommended that a heavy vegetative cover be maintained and/or planted. These areas as a whole can be a great advantage particularly if they can be programmed to be wild flower conservation areas, bird sanctuaries, wild animal refuge, hiking and scouting areas, and on occasion bridle trails and nature study areas."

This analysis of municipal plans reveals a local commitment to the preservation or enhancement of significant natural, historic, and aesthetic attributes. This commitment would reinforce any proposal to designate the Stony Creek and the adjacent visual corridor as a component of the State's Wild and Scenic Rivers System.

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ELIGIBILITY AND CLASSIFICATION CONSIDERATIONS

The Stony Creek and its adjacent lands have been evaluated in terms of the existing natural and man-made environment (Inventory attached). This basic information provides the supporting data to determine the eligibility of the Stony Creek as a State Scenic River. The Stony Creek must possess "outstandingly remarkable" wild, scenic, recreational, geologic, historical, cultural, wildlife and fishery values to be eligible for inclusion in the State Scenic Rivers System (Page 5, Pennsylvania Scenic River System - Program Guidelines - "Eligibility Criteria").

This evaluation also provides the basis for the following comparison to the State Wild and Scenic River classification criteria.

Impoundments

"Water shall be free-flowing. Low dams, diversion works, or other structures are not permitted. Future construction within the segment is restricted. Upstream impoundment construction shall be contingent on environmental or other adverse impacts."

The waters of Stony Creek are free-flowing. However, historically instream structures, including an impoundment at Cold Springs, could be formed at several points along the waterway corridor. At the present time only remnants of these previous impoundments are visible, and the Creek has returned to its natural course.

Water Quality

"Water Quality must be capable of meeting minimum criteria for desired types of recreational use, especially primary contact recreation, except where such criteria would be exceeded by natural background conditions. In addition, the water presently must be capable of supporting the propagation of aquatic life, including fish which normally would be adapted to the stream habitat under natural quality conditions."

The waters of Stony Creek while being soft and relatively infertile have been found to, in fact, support the propagation of native fish species. Although the study segment receives the discharge of acid water from abandoned deep mines along Rattling Run and Rausch Creek, aquatic life appears to be only moderately affected and continues to thrive in both numbers and diversity. The Stony Creek currently meets water quality standards and supports water-based recreation (fishing).

Development

"Shorelines or watersheds shall be essentially primitive. Shorelines are free of man-made intrusions, including waterway modification, with a direct and adverse effect on indigenous values. The watershed shall be natural-like in appearance. Occasional inconspicuous structures and a limited amount of

nonintensive agricultural uses are permissible. Conservation and management techniques must be consistent with the river environment."

The single most remarkable feature of the Stony Creek Watershed is the remote, wilderness-like experience it affords visitors which at the same time occupying an area in close proximity to significant population concentrations. The stream banks are virtually free of human intrusion except for the few historic structures which have long since fallen to ruin. The only areas exhibiting any evidence of human land transformation activities include the few scattered locations which are currently being managed by the Pennsylvania Game Commission for wildlife food.

The ownership of much of the study corridor by the Pennsylvania Game Commission since the early 1940's has insured the protection and continued restoration of Stony Valley. The proposed use of the utility-owned tract represents a major threat to the continued natural restoration and protection of the Valley.

Accessibility

"Water shall be generally inaccessible by road. No roads or other provisions for overland motorized travel are permitted within a narrow incised river valley, or if the river valley is broad, within 1/4 mile of, and parallel to, the river bank for a distance of about one mile. The presence, however, of one or two inconspicuous roads leading to the river area may be permissible."

The waters of Stony Creek are for the most part inaccessible by road. The only point of access to the interior of the Study Area occurs via an unimproved township road which traverses Fort Indiantown Gap to Cold Springs. Motorized public travel through the study corridor is prohibited (except for snowmobile use permitted on only the abandoned railroad bed). Historically, roadways and rail lines did penetrate the isolated valley. Water Tank Trail, Stagecoach Road, Cold Springs Road were at one time regularly used. Freight train loads of timber and coal passed frequently over the now-abandoned railroad bed. Over time, nature has reduced these roadways to mere trails. Only the abandoned railroad bed is still maintained as a service road by the Pennsylvania Game Commission.

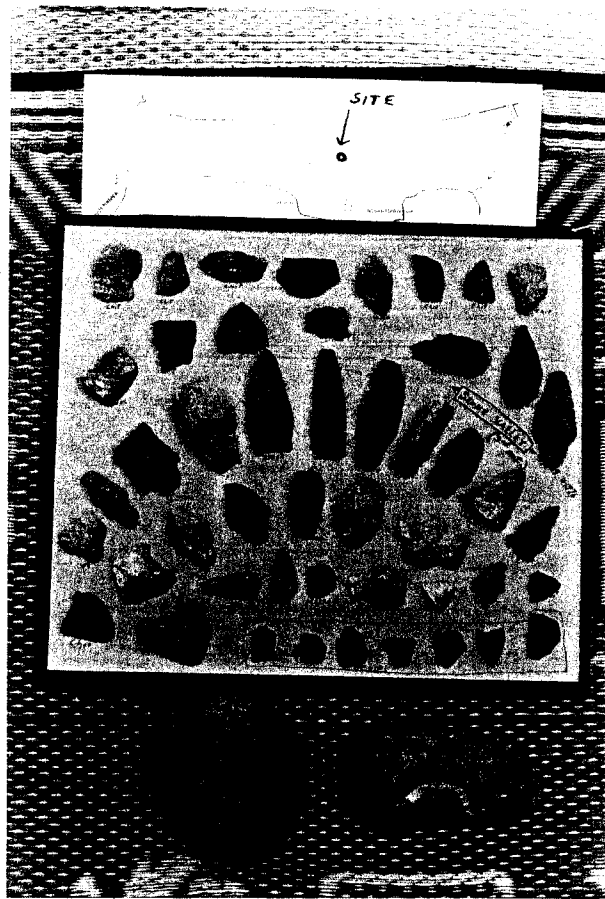


FIGURE 1. Indian relics from Stony Creek Valley.
(Del Zimmerman)

FIGURE 2. 1870 Map of Cold Spring Township in Stony Creek Valley.
(Dale Ibberson)

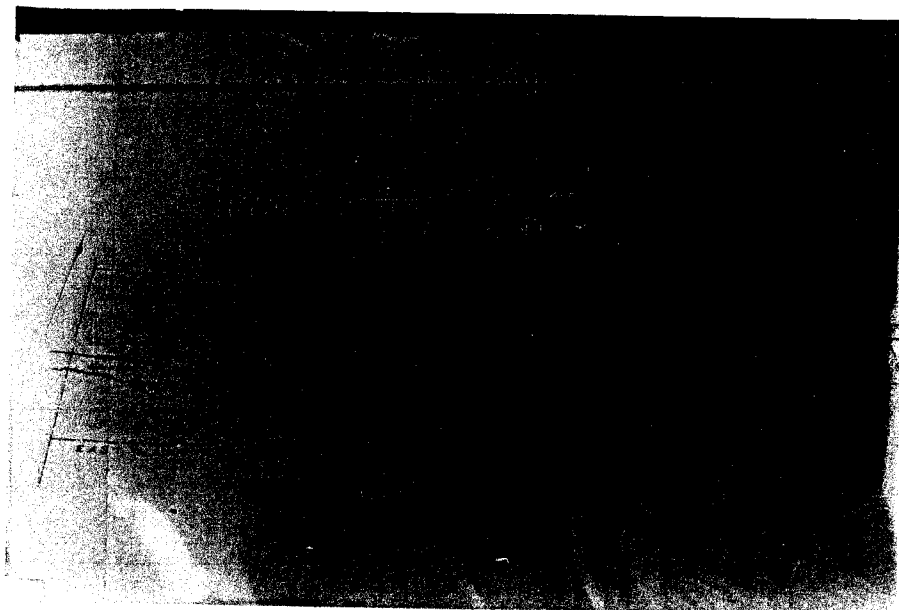
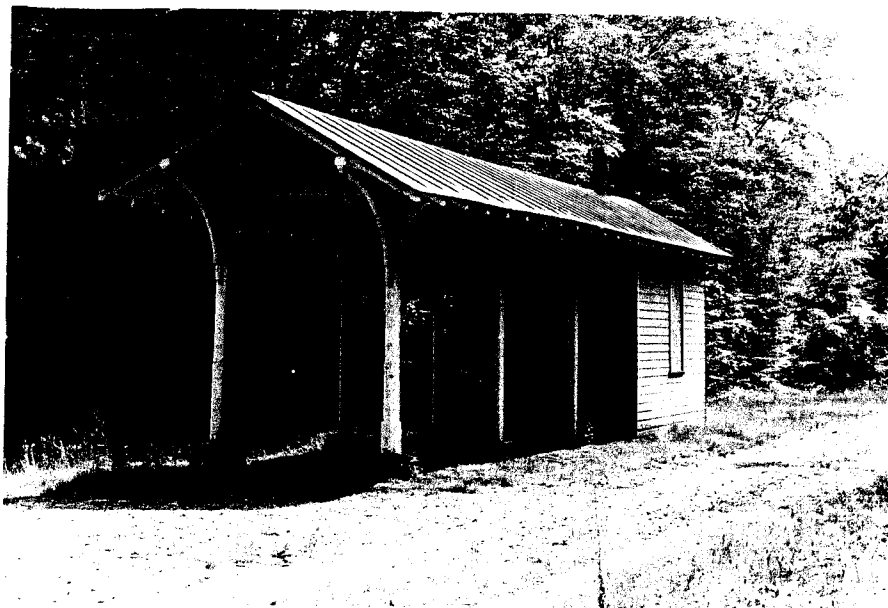




FIGURE 3. Stone Tower near Yellow Springs.
(SCVC)

FIGURE 4. Old railroad station at Cold Spring.
(Del Zimmerman)



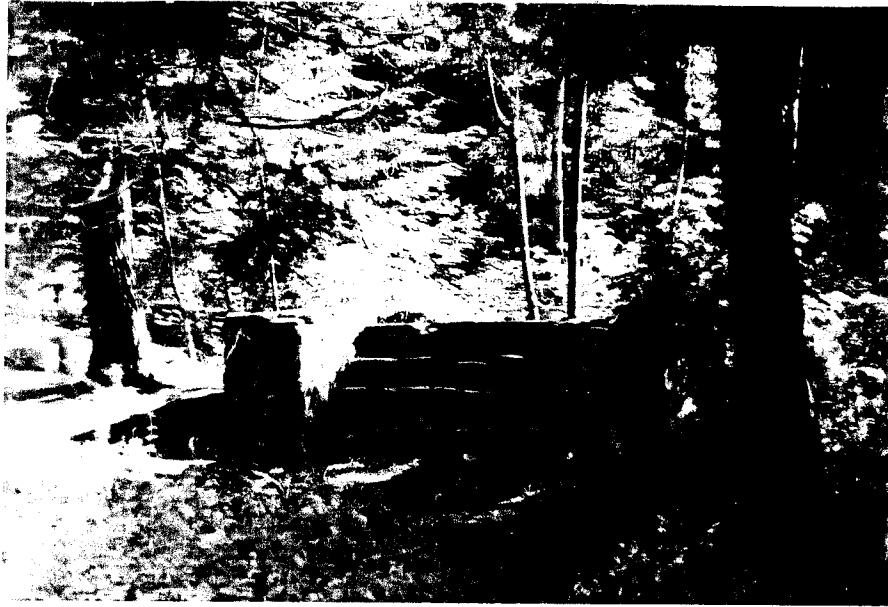


FIGURE 5. Remnants of the original Cold Spring Hotel.
(Del Zimmerman)



FIGURE 6. Rausch Gap Cemetery.
(Del Zimmerman)



FIGURE 7. Devil's Racecourse.
(Keith Kirk)



FIGURE 8. The clear waters of Stony Creek at floodstage.

(Gene Wingert)



FIGURE 9. Fourteen different species of trees and shrubs near Rattling Run provide evidence of the diverse vegetative composition of Stony Creek Valley.

(Gene Wingert)



FIGURE 10. American holly near Yellow Springs.

(Gene Wingert)



FIGURE 11. Breeding concentration of wood frogs on vernal pond in Stony Creek Valley.

(Gene Wingert)



FIGURE 12. Rausch Gap Shelter.
(Dale Ibberson)



FIGURE 13. Archery hunting along abandoned railroad bed.

(SCVC)



FIGURE 14. Horseback riding on the
abandoned railroad bed.
(SCVC)



FIGURE 15. Fisherman on Stony Creek.
(Duayne Forsberg)



FIGURE 16. Cross-country skiing on the abandoned railroad bed.
(Dale Ibberson)



FIGURE 17. Dogsledding on the abandoned railroad bed.

(Dale Ibberson)

DISCUSSION OF MANAGEMENT GUIDELINES

The development of guidelines for the future management of Stony Creek and the land corridor through which it flows represents the most important element of the Wild and Scenic Rivers Study Process. An accurate assessment of management issues which the management guidelines must address is an essential part of this process. To identify management issues, existing activities, plans, and programs which now or at some future time will affect the waterway corridor were carefully evaluated. This evaluation was not completed solely by the Department of Environmental Resources' staff, but instead, with the assistance of a study advisory committee comprised of local elected officials, owners of property within the Stony Creek corridor, and concerned private citizens. (See Appendix F)

The determination of Stony Creek as an eligible candidate for inclusion as a wild waterway in the State Wild and Scenic Rivers System is an essential prerequisite to any management discussion. The wild classification criteria, which best fits the existing condition of the Stony Creek corridor, sets the tone for future management by requiring that wild streams be characterized by free-flowing waters and a level of water quality which meets or exceeds current standards. In addition, to retain its recognition as a wild waterway the Stony Creek corridor may not be developed and must remain in a relatively primitive condition.

The key management issues surfaced with the analysis of activities, plans, and programs. (See resource inventory, "Proposed Plans and Programs") The Pennsylvania Game Commission which owns 90% of the Study Corridor is committed to implementing its management plan for wildlife management purposes. The question of whether the Game Commission Management Plan is compatible with the guidelines for management of designate wild river corridors will be analyzed later. The Pennsylvania Power and Light and Metropolitan Edison Companies have completed plans for constructing a pumped storage hydroelectric generating facility within the Stony Creek corridor. Proposed construction prescribes impoundment of the waters of Stony Creek and new road construction to improve access to the interior of Stony Creek Valley.

In the following section of this discussion, the management guidelines for designated wild waterways will be presented. These guidelines will pertain to the Stony Creek corridor upon legislative designation of Stony Creek as a wild State river. The management of land and water resources will be considered separately. The Game Commission's wildlife management plans will be analyzed following the presentation of land management guidelines and likewise, the aforementioned public utility plans will be analyzed following the presentation of water management guidelines. Alternative strategies will be suggested in the case where proposed plans are found to be incompatible with the prescribed management guidelines for designated wild rivers. In addition, an existing State agency will be assigned the administrative responsibility for overseeing the implementation of both the land and water management guidelines.

Management Guidelines for Wild River Corridors

Land Management

1. Forest Management

- a. No trees or other vegetation shall be harvested, cut, culled, thinned, removed, or otherwise disturbed on Commonwealth lands within 200 feet of the designated waterway, except those which

pose a threat to bank undercutting or erosion and public health and safety. Areas along the designated waterway which are currently subject to special management techniques and subsequently noted as special management areas by the Pennsylvania Game Commission may be maintained in herbaceous or shrub type vegetation as prescribed within the Commission's Forest Wildlife Management Plan.

- b. Between the 200 foot no-cut zone and the designated corridor limit line, the cutting and removal of trees and other vegetation on Commonwealth lands shall be allowed to the extent necessary to accommodate forest management and low-density recreational activities.
- c. Even-aged timber management shall be permitted between the 200 foot no-cut zone and the corridor limit line for the special purposes of improving wildlife habitat and salvage cutting areas damaged by fire, wind, insects or disease in accordance with State Game Land Management Plans. A 200 foot uneven-aged management buffer zone shall be maintained surrounding trails and low-density recreational sites recognized by State Game Land Management Plans. No cutting shall be permitted on slopes greater than 40%.
- d. No trees shall be felled into or across the designated waterway where avoidable and logging debris must be removed from the designated waterway.
- e. No new log landings or holding areas shall be established on Commonwealth lands within 200 feet of the designated waterway, except where the abandoned railroad grade encroaches within the 200-foot zone.
- f. Provisions shall be made after timber harvesting to restore vegetation on all landings, skid trails, and logging roads on Commonwealth lands in the designated corridor. With the completion of timber harvesting operations, logging roads connecting public access points on Commonwealth lands shall be closed and gated.
- g. All timber harvesting operations shall be subject to the requirements of Pennsylvania's erosion and sedimentation control standards.
- h. Skidding of logs and trees across the designated waterway shall not be permitted.
- i. Forest management and forestry use structures shall be permitted within the 200-foot no-cut zone and the corridor limit line.

2. Access and Motorized Vehicle Use

- a. No new public roads shall be permitted, except as needed for forest management purposes. New construction must be in accordance with an approved erosion and sedimentation control plan. New construction shall comply with the Department of Environmental Resources' design standards for service roads. (See Soil Erosion and Sedimentation Control Guidelines for Forestry, Pennsylvania Department of Environmental Resources, Bureau of Soil and Water Conservation)

- b. The use of motorized vehicles shall not be allowed except as necessary for forest management purposes or for emergency operations. Because the use of snowmobiles is currently permitted on the abandoned railroad grade, their use on only this area will be permitted to continue.
- 3. Surface Mining
 - a. Surface mining to reclaim previously mined areas and to abate acid mine drainage shall be permitted subject to special reclamation measures required by the Department of Environmental Resources.
- 4. Solid Waste Disposal
 - a. Solid waste disposal shall not be permitted.
- 5. Recreation Use and Development
 - a. Low density, non-motorized recreation uses shall be permitted on Commonwealth lands within the designated corridor.
 - b. Special rules and regulations may be used by Commonwealth agencies to regulate recreational uses of Commonwealth land and navigable waters, including the number and location of users, to prevent damage to natural resources and to protect the quality of the users recreational experience.
- 6. Land Development
 - a. New structures or bridges on Commonwealth lands, other than those necessary for forest and recreation use management shall not be permitted.
 - b. Wilderness foot trails (tread width not exceeding one foot), convenience facilities, adequately screened acid mine drainage abatement facilities, guaging stations, and other management facilities shall be permitted within the designated corridor, provided there is no adverse impact on the scenic character of the corridor.
 - c. Siting of major public utility uses within the designated corridor such as electric transmission lines, oil and gas pipelines, telephone cables, etc., shall be permitted only where undergrounding can be accomplished using existing rights-of-way.

Approximately 90% of the Stony Creek study area is currently owned and managed by the Pennsylvania Game Commission according to the management procedures presented in the Resource Inventory portion of this report. The past management practices exercised by the Game Commission within Stony Creek Valley have allowed

the area to recover from the historic effects of human intrusion. The wildlife management plan developed by the Game Commission prescribes varying degrees of cultural forest management. This means that certain areas are designated for even-aged forest management ("clearcuts") for purposes of forest regeneration creating open areas, and increasing the availability of browse and herbaceous fruits. On the other hand, the Commission has designated certain areas for uneven-aged or limited timber management. As an example, a narrow strip of land area paralleling a large portion of the abandoned railroad bed on the valley floor is earmarked for uneven-aged timber management. In addition, the Game Commission has noted preservation areas in its plan, including the land occupied by the Appalachian and Horseshoe Trails, the historic remains of villages at Rausch Gap, Yellow Springs, and Cold Spring. Steep slope areas, areas characterized by concentrated stands of unique vegetation, and game food plots have been designated as nonoperable areas.

The Commission is committed to its Federal funding sources to properly manage the area by utilizing the most effective techniques for creating and maintaining productive wildlife habitat. As a result of this analysis, it is apparent that Game Commission management of the Study Corridor would maintain the existing wild character of the area while improving the opportunities for hunting and related uses. Consequently, it is most appropriate that the Commission, with its vested interests in the Study Corridor, assume administrative responsibility for implementing the guidelines for management of Commonwealth-owned lands within the Stony Creek Study Area proposed for wild river designation. Further, it is recommended that management of all lands within the Stony Creek Valley Study Area proposed for wild river designation comply with the wild river management guidelines set forth in this report.

Water Resource Management

1. Stream Development

- a. Existing structures lawfully in existence on or before the date of designation may continue and be maintained, preferably with native materials, such as wood and stone, but may not be replaced.
- b. No new dam or other structure or improvement which impedes the natural flow of water shall be allowed.

2. Water Quality

- a. Water quality planning and management actions shall not encourage new development. Wastewater collection or treatment facilities shall not be permitted within the designated corridor.
- b. No new direct discharges of wastewater shall be permitted within the designated waterway, and no new upstream discharges shall be permitted which degrade present levels of water quality.

3. Water Flow

- a. Natural flow volumes shall be maintained.
- b. Upstream withdrawals shall be permitted provided such withdrawals do not adversely affect biotic systems, natural and scenic values and recreational opportunities within the designated waterway.
- c. Minimal withdrawal shall be permitted within the designated waterway provided such withdrawals do not adversely affect aquatic ecology or the potential for recreational uses normally associated with the designated segment in its natural condition.

The Pennsylvania Power and Light and Metropolitan Edison Companies have completed several investigations within the Stony Creek Study Area to determine the feasibility and subsequent impacts of constructing a pumped-storage hydroelectric generating facility. A portion of the "Project Concept" has been incorporated within the Resource Inventory portion of this report.

The most unique attribute of the Stony Creek Corridor lies not in rare or unusual natural characteristics, but instead, in its physical location. Although other Commonwealth streams may be equally deserving of recognition based on inherent rare or unique watershed characteristics, no other stream corridor in Pennsylvania possesses the wild attributes of Stony Creek Valley while being in such close proximity to significant population concentrations and intensive agricultural areas. It is largely for this reason that the Stony Creek Corridor as a whole is unique, and warrants inclusion within the Commonwealth's Wild and Scenic Rivers System.

The management guidelines for designated wild rivers prohibit dams and channel modifications, new public road construction, and major public utility uses including transmission lines, generating facilities, and other related uses. It is beyond the scope of this report to address energy requirements and the need for the public utilities' planned project. However, it is important to note that management of Stony Creek as a wild State waterway would conflict with current plans for development of the public utility-owned property.

With the realization of this development restriction through designation, a question of compensation to the public utilities must be considered should the proposed project be deemed necessary. One or a combination of the following procedures may be adopted by the public utilities in alleviating losses which may be experienced with the designation of Stony Creek as a wild State waterway.

1. The public utilities may through a formal decision by the Board of Directors allow the land to revert back to the Pennsylvania Game Commission's ownership and management jurisdiction.
2. An exchange of land may be consummated between the public utilities and the Department of Environmental Resources involving the interior holding within the Stony Creek Study Area and another tract of Department-owned land suitable for the construction and feasible operation of a pumped-storage hydroelectric generating facility.
3. The Commonwealth may consider various financial arrangements involving tax benefits which may be realized by the public utilities along with fair market value of the utility-owned land tract.

It is most appropriate that the Department of Environmental Resources, with its existing mechanisms for reviewing dams and encroachment projects, assume the administrative responsibility for implementing the water management guidelines for designated wild rivers. In addition, it is recommended that with legislative designation of Stony Creek a detailed water quality monitoring program be initiated for purposes of prescribing the most effective methods for correcting current problems associated with acid mine discharges.

Legislative Considerations

Legislation is required to officially designate components of the Pennsylvania Scenic Rivers System and to recommend future management guidelines for the Stony Creek Corridor. The legislation should establish an approach with respect to protection, use, management and administration of designated waterways and river corridors, including methods and techniques of implementing the approach. The following draft legislation addresses the needs and reflects the major concerns expressed throughout the study process.

A Bill

Designating the Stony Creek as a component of the Pennsylvania Wild and Scenic Rivers System in accordance with the Pennsylvania Scenic Rivers Act; providing for cooperation, limitation of liability and regulation of river recreational usage and authorizing the expenditure of monies.

The General Assembly of the Commonwealth of Pennsylvania hereby enacts as follows: Section 1. Short Title.

This Act shall be known and may be cited as the "Stony Creek Wild and Scenic River Act."

Section 2. Legislative findings and purpose.

The Department of Environmental Resources has, in accordance with the act of December 5, 1972 (P.L. 1277, No. 283), known as the "Pennsylvania Scenic Rivers Act", fulfilled its obligations and responsibilities prerequisite to the designation of the Stony Creek as a component of the Pennsylvania Scenic Rivers System. The designation of the Stony Creek by this act is with the view of conserving and enhancing its scenic quality and of promoting public recreational enjoyment, in accordance with the policy and provisions of the "Pennsylvania Scenic Rivers Act."

Section 3. Designation and Classification.

The 16-mile mainstem of Stony Creek and the three tributary streams - Rattling Run, Yellow Springs, and Rausch Creek - and related adjacent land areas, from the headwaters in Lebanon County to the Pennsylvania Game Commission gate at Ellendale Forge, Dauphin County, is designated as a wild component of the Pennsylvania Scenic Rivers System under the Pennsylvania Scenic Rivers Act. The boundaries of the component corridor have been defined by the Department of Environmental Resources and are shown on the map entitled, "Stony Creek Study," which is on file and available for public inspection in the Bureau of Land Records, Department of Community Affairs of the Commonwealth of Pennsylvania.

Section 4. Management Responsibilities.

The Pennsylvania Game Commission and the Department of Environmental Resources shall exercise administrative responsibilities in implementing the "Management Guidelines for Wild River Corridors" as outlined within the "Discussion of Management Guidelines" in the text of the study of Stony Creek conducted by the Department of Environmental Resources under the "Pennsylvania Scenic Rivers Act" and known as the "Stony Creek Study." Further, the Pennsylvania Game Commission shall exercise administrative responsibilities in implementing the land management guidelines on Commonwealth lands within the designated component. The Department of Environmental Resources shall exercise administrative

responsibilities in implementing the water resource management guidelines and where applicable, the surface mining and solid waste disposal provisions of the land management guidelines.

Section 5. Cooperation and Coordination.

All State agencies are authorized to seek the help of and enter into agreements with the Federal Government and its agencies and commissions, local governments and concerned private individuals and organizations with the view of fostering cooperation and coordination to further the purpose of this act. To this end, the Department of Environmental Resources shall also seek the cooperation of the Susquehanna River Basin Commission.

Section 6. This act shall take effect immediately.

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APPENDIX A

SOIL TYPES

| <u>SERIES</u> | <u>MAP* SYMBOL</u> | <u>CHARACTERISTICS</u> |
|---------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANDOVER | AoB | 0-8% slope, very stony loam. Deep poorly drained, gently sloping soils on foot slopes. Water table remains near surface for long periods due to slow permeability. Vegetation consists of mixed hardwoods. High water table has severe limitations for development. Recommended for forest cover with managed forest practices. |
| ATKINS | At | Silt loam found on flood plains and swampy areas. Series consists of deep, poorly drained soils derived from noncalcareous shale and sandstone. Mixed hardwoods compose vegetation. Flooding and a high water table limit developing on these soils. Recommended for agriculture, forest cover and wildlife habitat. |
| BASHER | Bc | Siltation formed in sediments washed from red shale and sandstone. Occurs along streams and is subject to flooding. Because of flooding and a seasonal high water table, this soil is not suitable for building sites. Notice vegetation is chiefly hardwoods where water is low enough. |
| BUCHANAN | BvB | 0-8% slope, very stony loam. Deep, nearly level to sloping soils, moderately well drained, found on lower mountain slopes. Formed from shale and sandstone. Vegetation includes hardwoods and scattered pines and hemlocks. Moderate potential for development. Suitable for wildlife habitat and woodland management. |
| CALVIN | CaD | 8-25% slope, very stony silt loam consists of moderately deep, well-drained soils high on the slopes of steep mountains. They are formed in materials weathered from red shale and sandstone. The soil is only slightly eroded and has numerous stones scattered throughout. This soil is suited to trees and should remain forested. Management practices are needed that help to control erosion and to ensure good growth of trees. |

*Reference to aerial map symbols depicting various soil types within Dauphin and Lebanon County soil surveys.

| <u>SERIES</u> | <u>MAP SYMBOL</u> | <u>CHARACTERISTICS</u> |
|----------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DEKALB | DIB DID DIF | Very stony land found on lower sandstone ridges to higher parts and in saddles, ranging from 0-80% slope. Moderately deep, nearly level to very steep, well drained soil. Moderately rapid permeability and low available moisture capacity. Vegetation composes oaks and pines. Due to steepness and closeness of bedrock, moderate to severe limitation exist for development. |
| LAIDIG | LdB LdD | Very Stony loam, 8-25% slope found on lower slopes of mountain ridges. Deep, gently sloping to moderately steep, well drained, weathered from sandstone and shale. Mixed hardwoods compose vegetation although some areas covered with stone and boulders with little vegetation cover. Due to stoniness and slope, development has moderate to severe limitations. Wildlife habitat and limited recreational development is recommended for this soil type. |
| VERY STONY LAND Sloping | VsC | 15-100% slope, found on ridge tops and along tributaries of Stony Creek. Occurs in areas where stones and boulders cover soil surface. |
| VERY STONY LAND Steep | VsF | Steep, Very Stony Land is covered with solid bedrock and stones of quartzite, sandstone and conglomerate resistant of weathering. Limited use for wildlife habitat. |

SOURCES: Soil Conservation Service (USDA) Soil Surveys, Dauphin County, 1972.
Lebanon County Soil Survey, 1969.

| <u>Soil Series</u> | <u>Soil Symbol</u> | <u>Land Capability Class</u> | | <u>Potential Productivity</u> |
|--------------------|--------------------|------------------------------|------------------|----------------------------------------------------|
| | | | <u>Sub-Class</u> | <u>For Upland Oaks and</u> <u>Yellow Poplar</u> |
| Andover | AoB | VII | S-2 | Good |
| Atkins | At | III | W-1 | Fair Yellow Poplar Not Adapted |
| Buchanan | BvB | VII | S-1 | Good |
| Dekalb | DIB | VI | S-1 | Fair |
| | DID | VI | S-1 | Yellow Poplar Not Adapted |
| | DIF | VII | S-1 | Yellow Poplar Not Adapted |
| Laidig | LdB | VI | S-1 | Good |
| | LdD | VI | S-1 | |
| Basher | Bc | II | W-1 | Excellent |
| Calum | CaD | VII | S-1 | Good: Upland Oaks Yellow Poplar Not Adapted |

APPENDIX B

MEAN MONTHLY STREAMFLOW RECORD* STONY CREEK AT DAUPHIN

| Year | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|------|------|------|------|------|------|------|------|------|------|------|------|-------|
| 1938 | 77.8 | 124 | 59.5 | 67.8 | 62.8 | 71.9 | 53.7 | 44.3 | 27.3 | 39.1 | 24.6 | 27.1 |
| 1939 | 28.4 | 56.7 | 121 | 59.1 | 128 | 104 | 112 | 35.8 | 13.3 | 9.6 | 8.82 | 5.14 |
| 1940 | 8.71 | 10 | 11.8 | 19.1 | 25 | 115 | 227 | 68.4 | 50.3 | 16.9 | 12.1 | 20.4 |
| 1941 | 14.7 | 52.1 | 57.7 | 55.4 | 41.8 | 69.8 | 85.3 | 26.4 | 17.5 | 13.4 | 7.57 | 6.6 |
| 1942 | 4.29 | 11.8 | 51.1 | 36.5 | 60.2 | 89.2 | 90.5 | 155 | 46.3 | 27.6 | 76.5 | 38.4 |
| 1943 | 73.1 | 69.8 | 108 | 82.1 | 78.2 | 107 | 94.1 | 115 | 56.5 | 20.1 | 9.13 | 6.48 |
| 1944 | 34 | 133 | 20.0 | 60.9 | 30.9 | 122 | 121 | 123 | 41.5 | 14.9 | 11.0 | 9.96 |
| 1945 | 12.5 | 16.6 | 92.6 | 31.2 | 60.4 | 120 | 126 | 170 | 58.8 | 115 | 41.5 | 55.3 |
| 1967 | | | | | 34.9 | 120 | 67.8 | 103 | 26.6 | 42.2 | 28.8 | 13.4 |
| 1968 | 28.5 | 45.7 | 65.8 | 42.1 | 47.2 | 60.7 | 52.4 | 89.5 | 64.9 | 12.4 | 9.94 | 41.8 |
| 1969 | 14.3 | 42.5 | 44.9 | 28.2 | 25.5 | 62.7 | 79.7 | 67.9 | 44 | 37.1 | 68.7 | 14.4 |
| 1970 | 11.7 | 36.7 | 55.9 | 34.9 | 122 | 76.9 | 179 | 75.5 | 43.4 | 55.8 | 16.4 | 13.1 |

*from United States Geological Survey, Water Supply Papers.

All recorded flows in units of cubic feet per second (cfs).

APPENDIX C

PUBLIC RECREATION AREAS

The Stony Creek Valley watershed lies within State Game Lands #211. By virtue of its designation as a state game land, one might assume that the widest recreational use of Stony Creek Valley is hunting. However, due to unusual scenic beauty and wilderness attributes, the Valley attracts people seeking a much broader spectrum of activities, inventoried as follows:

| <u>Recreational Activity</u> | <u>Area Used</u> | <u>County and Area Used</u> |
|----------------------------------|--------------------------------------|--------------------------------------------------|
| <u>Hunting</u> | Entire wilderness | Dauphin (24,000 acres) Lebanon (12,000 acres) |
| <u>Fishing</u> | Stony Creek (15 miles) | Dauphin (8 miles) Lebanon (7 miles) |
| | Rattling Run (1 mile) | Dauphin (1 mile) |
| <u>Hiking, Day</u> | *Appalachian Trail (10.2 miles) | Dauphin (4 miles) Lebanon (6.2 miles) |
| | Railroad Bed (17 miles) | Dauphin (9 miles) Lebanon (8 miles) |
| | Old Stage Coach Road (6.8 miles) | Dauphin (4.8 miles) Lebanon (2 miles) |
| | Second Mountain Trail (3.4 miles) | Dauphin (1.1 miles) Lebanon (2.3 miles) |
| | Horseshoe Trail (4 miles) | Dauphin (4 miles) |
| | Cold Spring Trail (1 mile) | Lebanon (1 mile) |
| | Gold Mine Siding Trail (1 mile) | Lebanon (1 mile) |
| | Water Tank Trail (1/2 mile) | Dauphin (1/2 mile) |
| | Rattling Run Trail (4 miles) | Dauphin (4 miles) |
| | Yellow Spring Trail (2 miles) | Lebanon (2 miles) |
| | Old Wagon Road (2 miles) | Lebanon (2 miles) |

APPENDIX D
STONY CREEK RECREATIONAL SURVEY

1. Is this your first visit to Stony Creek? Yes - 58 No - 101
2. Do you belong to any environmental/ecological group or club? Yes - 27 No - 140
3. Do you belong to any sportsmen group such as a hunting or fishing club?
Yes - 42 No - 123 No answer - 2
4. Would you describe your upbringing as: Urban-large city - 20
Urban-small town - 45
Suburban - 34
Rural - 67
No answer - 1
5. At what point did you enter Stony Creek Valley? Ellendale Forge - 89
Cold Springs - 22
Route 325 - 20
Gold Mine Road - 35
Other - 2
6. How important is Stony Creek Valley as a source of recreation for you?
Important - 126
Neutral - 36
Insignificant - 1
No answer - 3
7. What effect would the building of a pumping station in Stony Creek Valley have upon your use of the area?
Interfere - 115
Neutral - 36
Benefit - 6
No answer - 10
8. Specific area of the Valley which you particularly enjoy and frequently visit?

| | |
|-------------------------|-----------------------|
| Rattling Run - 16 | Gold Mine area - 3 |
| Yellow Springs - 3 | Appalachian Trail - 2 |
| Ellendale Forge - 6 | Table Rock - 1 |
| Rausch Gap - 3 | Water Tank Trail - 1 |
| Cold Springs - 22 | Tie Town - 1 |
| Heart of the Valley - 3 | Stony Creek - 1 |
| All parts - 14 | Railbed - 2 |
| No answer given - 96 | |
9. Please indicate by season the approximate number of days you use Stony Creek Valley for each of the following activities.

| | <u>Spring</u> | <u>Summer</u> | <u>Fall</u> | <u>Winter</u> |
|----------------------|---------------|---------------|-------------|---------------|
| Fishing | 510 | 469 | 152 | 47 |
| Hunting small game | 17 | 36 | 147 | 9 |
| Hunting large game | 4 | 3 | 62 | 108 |
| Day hiking | 181 | 245 | 122 | 58 |
| Bicycling | 122 | 111 | 52 | 1 |
| Overnight hiking | 108 | 112 | 70 | 48 |
| Skiing & snowshoeing | 0 | 0 | 0 | 8 |
| Other | 1 | 15 | 0 | 0 |

APPENDIX E

THE PENNSYLVANIA SCENIC RIVERS ACT

The following is a copy of the "Pennsylvania Scenic Rivers Act," Act No. 283 of the General Assembly, approved by the Governor of Pennsylvania on December 5, 1972. This Act authorizes the establishment of the Pennsylvania Scenic Rivers System, defines terms related to the Act, imposes powers and duties on the Department of Environmental Resources and its Secretary and authorizes the use of the power of eminent domain in certain cases.

- Section 1. Short Title. - This Act shall be known and may be cited as the "Pennsylvania Scenic Rivers Act."
- Section 2. Declaration of Policy. - Many of the rivers of Pennsylvania, or sections thereof and related adjacent land areas, possess outstanding aesthetic and recreational values of present and potential benefit to the citizens of Pennsylvania. It shall be the policy of the Commonwealth to protect these values and to practice sound conservation policies and practices within this Scenic Rivers System. It is, therefore, essential that a Pennsylvania Scenic Rivers System be developed so that these purposes may be fulfilled. The General Assembly affirms that it must assure the people of this generation and their decedents the opportunity to refresh their spirits with the aesthetic and recreational qualities of unspoiled streams. To implement these policies it is the purpose of this Act to establish the Pennsylvania Scenic Rivers System by prescribing the procedures and criteria for protecting and administering the system and for adding new components to it from time to time.
- Section 3. Definitions. - As used in this Act.
- (1) "River" means a flowing body of water or estuary or a section, portion, or tributary thereof, including rivers, streams, creeks, runs, kills, rills, and small lakes.
 - (2) "Free-flowing" as applied to any river or section of a river, means existing or flowing in natural condition without impoundment, diversion, straightening, riprapping, or other modification of the waterway except in segments classified as modified recreational rivers. The existence, however, of low dams, diversion works, and other minor structures at the time any river is proposed for inclusion in the Pennsylvania Scenic Rivers System shall not automatically bar its consideration for such inclusion; provided that this shall not be construed to authorize, intend, or encourage future construction of such structures within components of the Pennsylvania Scenic Rivers System.

- (3) "Scenic easement" means the right to control the use of land for the purpose of protecting the scenic values of the river valley, but such control shall not affect, without the owner's consent, any regular use exercised prior to the acquisition of the easement.

Section 4. Pennsylvania Scenic Rivers System.

- (a) The Pennsylvania Scenic Rivers System shall comprise rivers:
 - (1) That are recommended as wild, scenic, recreational, or modified recreational rivers by the Department of Environmental Resources; and
 - (2) That are authorized for inclusion therein by law.
- (b) A wild, scenic, recreational, or modified recreational river area eligible for inclusion in the system is a free-flowing stream and the related adjacent land area possesses one or more of the values referred to in section 2 of this Act. Every such river shall be classified, designated and administered as one of the following:
 - (1) Wild river areas - those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted.
 - (2) Scenic river areas - those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and undeveloped but accessible in places by roads.
 - (3) Recreational rivers - those rivers or sections of rivers that are readily accessible, that may have some development along their shorelines and may have undergone some impoundment or diversion in the past.
 - (4) Modified recreational rivers - those rivers or sections of rivers in which the flow may be regulated by control devices located upstream. Low dams are permitted in the reach so long as they do not increase the river beyond bank-full width. These reaches are used for human activities which do not substantially interfere with public use of the streams or the enjoyment of their surroundings.

Section 5. Potential Designated Rivers as Components of the Pennsylvania Scenic Rivers System; Public Hearings.

- (a) The Department of Environmental Resources shall study, conduct public hearings as provided in section 5(b) of this Act, and from time to time submit to the Governor and to the General Assembly proposals for the designation of rivers or sections of rivers as components of the Pennsylvania Scenic Rivers System, as set out in section 4 of this Act. Each proposal shall specify the category of the proposed river segment and shall be accompanied by a detailed report on all the factors involved as well as a transcript of the public hearings conducted.
- (b) A public hearing shall be held in the county where the land is situated at which hearing the Department shall set forth the area to be taken and its proposed use. If the land is located in more than one county, such hearing shall be held in every county wherein the land is situated. Notice of the public hearing shall be given at least three weeks before in a newspaper of general circulation in the county, or in the case of land located in more than one county, in a newspaper of general circulation in each county. Notice shall also be given three weeks in advance by certified mail to the owners of the land involved.

Section 6. Land Acquisition.

- (a) The Department of Environmental Resources is authorized to acquire scenic easements within the authorized boundaries of any component of the Pennsylvania Scenic Rivers System designated by law. The Department shall have the power of condemnation in accordance with the provisions of the Act of June 22, 1964 (P.L. 84), known as the "Eminent Domain Code," when necessary to acquire scenic easements or other easements as are reasonably necessary to give the public access to the river.
- (b) The head of any State department or agency which has administrative jurisdiction over any lands or interests in land within the authorized boundaries of any State-administered component of the Pennsylvania Scenic Rivers System shall cooperate with the Department of Environmental Resources so as to implement the policies and practices of this Act.
- (c) The Department of Environmental Resources is authorized to accept donations of land, interests in land, funds, and other property for use in connection with the administration of Pennsylvania Scenic Rivers System.

- Section 7. National Wild and Scenic Rivers Act. - The Secretary of Environmental Resources is directed to encourage and assist any Federal studies for inclusion of Pennsylvania rivers in a national scenic rivers system. The Secretary may enter into written cooperative agreements for joint Federal-State administration of a Pennsylvania component of the National Scenic Rivers System, provided such agreements for the administration of land and water uses are not less restrictive than those set forth in this Act.
- Section 8. Easements and Rights-of-Way. - The Department of Environmental Resources may grant easements and rights-of-way upon, over, under, across, or through any component of the Pennsylvania Scenic Rivers System in accordance with laws and regulations applicable to the Department, provided that any conditions precedent to granting such easements and rights-of-way shall be related to the policy and purposes of this Act.
- Section 9. Effective Date. - This Act shall take effect immediately.

APPENDIX F
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APPENDIX G

This report represents the first attempt by the Department of Environmental Resources at utilizing the voluntary assistance offered by interested private citizens in the collection of information needed to determine the eligibility and classification of a proposed wild and scenic waterway. The direct involvement by the Stony Creek Valley Coalition in providing much of the inventory data for this study is commendable. The contributors are acknowledged below.

In alphabetical order:

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